Preface

Thank you for purchasing the AXIS 540/640 Network Print Server. Our goal in developing this product is to enable you to connect your printers anywhere in your network, allowing all network users access to shared printer resources.

About Axis

Axis Communications, founded in 1984, is one of the world's fastest growing companies in the market of network connectivity. The headquarters are located in Lund, Sweden, with subsidiaries in Beijing, Boston, Hong Kong, Paris, Sao Paulo, Shanghai, Singapore and Tokyo.

Axis Communications has a distributor network operating in more than 60 countries world-wide, marketing four major product lines:

Network CD-ROM Servers. Multi-protocol CD-ROM servers provide a flexible and cost-efficient solution for sharing CD-ROMs across the network. The AXIS StorPoint CD, the stand-alone version, and the AXIS StorPoint CD/T, the plug-in CD-ROM tower module, are both available in Ethernet and Token Ring versions.

Network Print Servers. These intelligent Ethernet and Token Ring print servers support a wide range of LAN protocols. The AXIS 150, 152, 540, 542, 560, 570 are Ethernet print servers, while the AXIS 640, 642, 660, 670 are Token Ring print servers.

Network Camera Servers. The AXIS NetEye 200 Network Camera attaches directly to an Ethernet network and supports TCP/IP and Internet-related protocols, acting as a Web server.

IBM Mainframe and S/3x – AS/400 Printer Interfaces. These products include a wide range of plug-in interfaces and stand-alone products such as the AXIS Cobra+, AXIS 330/370 Cobra, AXIS HP MIO, the AXIS AFP IPDS-to-PostScript converter and the AXIS AFP MIO/IOP IPDS-to-PCL converters.

About this manual

This manual will guide you through simple step-by-step installation and set up procedures.

Introduction - The AXIS 540/640 Print Server, how it works, where to use it, its main features.

Basic Installation - How to connect your AXIS 540/640 to your printer and network.

Setting Up... - Five sections; one for each of the network environments for your AXIS 540/640.

Every care has been taken in the preparation of this manual; if you detect any inaccuracies or omissions, please inform us at the address on the back cover. Axis Communications AB cannot be held responsible for any technical or typographical errors and reserves the right to make changes to the product and manuals without prior notice.

Electromagnetic Compatibility (EMC) notices

USA

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference. Shielded cables should be used with this unit to ensure compliance with the Class A limits.

Europe

This digital equipment fulfils the requirements for radiated emission according to limit B of EN55022/1987, and the requirements for immunity according to EN50082-1/1992 residential, commercial, and light industry. (Compliance is not valid for unshielded network and printer cables.)

Trademark acknowledgements

AIX, Apple, DEC, DOS, Ethernet, EtherTalk, HP, IBM, LAN Manager, LAN Server, Macintosh, Microsoft, MVS, Netscape, Novell NetWare, OS/2, OS/400, PostScript, PS/2, SCO, TokenTalk, UNIX, VM, VMS, VSE, Windows, Internet Explorer, Netscape Navigator, Oracle Power Browser, NCSA Mosaic, Chimera, WWW, Internet are registered trademarks of the respective holders.

Table of Contents

Section 1   Introduction

The AXIS 540/640 series is a range of plug-in network print servers for use in Ethernet and Token Ring environments. The AXIS 540/640 server plugs directly into the printer's parallel port and provides all network users with access to shared printer resources.

Using state of the art technology the server provides excellent print flexibility and simultaneously supports multiple network protocols. This includes advanced support for TCP/IP, support for NetWare including NDS, and support for over 20 UNIX systems, Windows for Workgroups, Windows 95, Windows NT, and OS/2. The AXIS 540/640 range also includes AXIS 540+ and 542+ models which support Apple EtherTalk in addition to the above protocols.

Network Connections

The AXIS 540/542 and AXIS 640/642 print servers have identical functionality, but are designed for use in different network environments, or with different types of network cabling.

The AXIS 540/540+ and AXIS 542/542+ are suitable for Ethernet network environments. The AXIS 540/540+ have network connectors for twisted pair (10 base T) cabling, while the AXIS 542/542+ have network connectors for thin wire (10 base2) cabling.
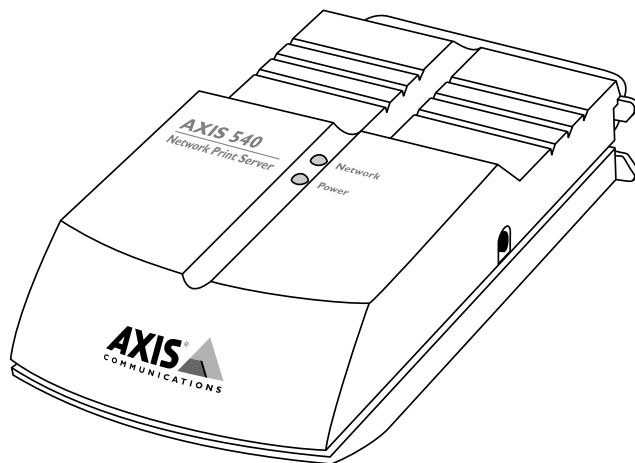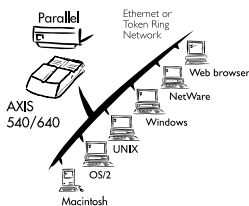

The AXIS 540 Network Print Server

The AXIS 640/642 models are suitable for Token Ring network environments. The AXIS 640 has a network connector for Unshielded Twisted Pair (UTP) cabling, while the AXIS 642 has a network connector for Shielded Twisted Pair (STP) cabling.

How it Works

Because of the variety of computer and operating systems employed in a modern computing environment, it is common for print data to be transmitted across a single network using a variety of transport protocols. The AXIS 540/640 Print Server automatically detects the protocol being used for each print job, and adapts the print data into a format which is suitable for the printer.

As the AXIS 540/640 is a pocket-sized print server which plugs directly in to the printer's parallel port, there is no need for additional cabling.

Installation of the AXIS 540/640 and its integration into the network is performed using one of the Axis software packages; AXIS Print Utility for Windows, AXIS Print Utility for OS/2, *axinstall* for UNIX environments, and AXIS NetPilot.

If you are using the TCP/IP network transport protocol and have access to an Internet browser, you may also access AXIS 540/640 series of Network Print Servers from any standard Web browser, regardless of your type of platform. Furthermore, the enhanced HTTP support available in the AXIS 540+/542+ and Token Ring models includes a quick and easy management tool that allows you to configure and view unit status, within all supported networking environments.

The AXIS NetPilot software, which is supplied on the AXIS Utilities diskette, makes the job of installation and configuration quick and convenient. AXIS NetPilot runs on Windows platforms, and provides a quick installation facility so that the AXIS 540/640 can be rapidly put to use. Together with the supplied AXIS Utilities, it provides user friendly facilities to tune the configuration, allowing you to maintain optimum printing performance as you make changes to the network.

For more detailed information that is not included in this manual, you are invited to visit our WWW Home Page where you can down-load further technical information. You may also down-load on-line manuals, tools such as the Acrobat Reader and the latest versions of the software utilities. Naturally enough links to this information are provided from within the AXIS 540/640 home pages. Your Axis dealer will also be pleased to provide you with additional information or assistance that you might require. For details on the appropriate WWW addresses in your region, please refer to *Appendix E - How To Contact Axis*.

Where to use it

Parallel

Ethernet or
Token Ring
Network

AXIS
540/640

Web browser

NetWare

Windows

UNIX

OS/2

Macintosh
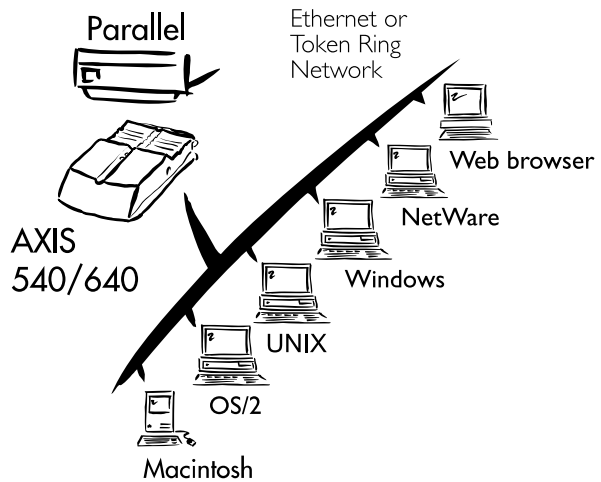
The AXIS 540/640 can communicate with all the major computer systems and network protocols. The supported protocols can be handled simultaneously making the AXIS 540/640 the ideal print server solution for a mixed systems environment.

Web Browser

Because the AXIS 540/640 comprises its own built-in Web server it may be configured and managed directly from its own Web pages, using HTTP over a TCP/IP network. Access to the AXIS 540/640 via HTTP, affords the user with a platform-independent management tool that is suitable for all of the supported network environments.

NetWare Environment

AXIS NetPilot is the preferred utility for installing and integrating the AXIS 540/640 into a NetWare environment. The AXIS 540/640 can be operated in both Print Server Mode and Remote Printer Mode.

It is compatible with both NetWare 4.10 and above (NDS and bindery emulation), as well as NetWare 3.11, 3.12.

In Print Server Mode the AXIS 540/640 emulates a NetWare print server, while in Remote Printer Mode it emulates a workstation running RPRINTER or NPRINTER. Logical printers are supported in both bindery and NDS modes for both PSERVER and NPRINTER.

Windows Environments

Unless you wish to change the default name of your AXIS 540/640 the setup operation within the windows environment may be performed solely with the AXIS Print Utility for Windows, which is supplied on the AXIS Utilities diskette.

Having installed the AXIS 540/640 onto your network, the AXIS Print Utility for Windows may then be used to install and maintain the print server ports as Windows printer ports. Windows 3.1, Windows for Workgroups, Windows 95, and Windows NT are all supported.

OS/2 Environments

Unless you wish to change the default name of your AXIS 540/640 the setup operation in an OS2 environment may be performed solely with the supplied AXIS Print Utility for OS2.

Use the AXIS Print Utility for OS/2 to install and integrate the AXIS 540/640 into the OS/2 spool system. The printers attached to the AXIS 540/640 will appear as connected directly to the file server, and may be used by any client on your network.

UNIX Environment

You can use the AXIS 540/640 as an integral part of your system, so that the printers appear directly connected to the host print spool. Use *axinstall* for the integration. You can also operate the AXIS 540/640 in an interactive mode to print your host documents.

Several protocols and print methods are provided, the choice of which is governed by your requirements and the system you are using. Five print methods are supported in UNIX: LPD, FTP, PROS A, PROS B, and Reverse Telnet.

The AXIS 540/640 supports any host that uses the TCP/IP protocol suite.
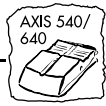
Macintosh Environment (AXIS 540+/542+ only)

The printer connected to the AXIS 540+/542+ will appear as a LaserWriter printer connected to an AppleTalk network. Once selected from the Chooser window in the Apple menu, the printers can be accessed in the same manner as any other LaserWriter.

Main Features

Reliability

The AXIS 540/640 hardware provides high performance and reliability combined with low power consumption. The electronic circuits are based on the proven AXIS ETRAX chip that comprises an integrated 32 bit RISC processor and associated network controllers.

Flexibility

It supports NetWare, Windows 95, Windows NT, Windows for Workgroups, OS/2, Macintosh, and UNIX simultaneously, and five different print methods in the TCP/IP environment.

Speed

The AXIS ETRAX chip has been specifically designed for LAN products and benefits users with a significantly faster throughput than a direct PC-to-printer connection. The AXIS 540/640 has a sustained data throughput of up to 390 kbytes per second. It also supports high speed Centronics communication such as Hewlett-Packard Fast Mode, High Speed and IBM Fast Byte is supported.

Easy to Install

Without being a computer expert you can install the AXIS 540/640 in minutes, allowing you to quickly realise the benefits afforded by workgroup printing. The AXIS NetPilot installation software includes a user friendly installation wizard. Together with the *axinstall* script for UNIX workstations this allows installation into all of the AXIS 540/640 networking environments.

For TCP/IP networks your favourite Web browser may also act as a convenient configuration tool. Links provided within the AXIS 540/640 Web pages allow modification of the configuration parameters and quick access to useful information.

Security   You may set up passwords for all users, restricting both log in and printer access.

Monitoring   The AXIS NetPilot software provided allows you to continuously monitor printer status. The AXIS 540/640 also supports SNMP for remote monitoring.

Futureproof   The AXIS 540/640 has the ability to have its Flash memory updated. This allows you to quickly update and enhance the operational features of your AXIS 540/640 when new print server software becomes available. All software updates are free of charge. You may perform the update operation over the network which makes the job of updating your AXIS 540/640 quick and easy.

Pocket-sized   One high-speed parallel port that plugs directly into the printer´s parallel port. No cables needed. Bi-directional support for Apple EtherTalk.

Section 2 Basic Installation

Checking and Identifying the Hardware

Unpack and check all the items using the following check list. Contact your dealer if anything is missing or damaged. All packing materials are recyclable.

The AXIS 540/640 Hardware Pack contains:

☐ AXIS 540, part no: 0058-1, **or** AXIS 542, part no: 0058-2, **or** AXIS 540+, part no: 0058-3, **or** AXIS 542+, part no: 0058-4, **or** AXIS 640, part no: 0059-1, **or** AXIS 642, part no: 0059-2

☐ AXIS 540/640 User's Manual, part no: 14677

☐ AXIS 540/640 User's Printing Guide, part no: 14678

☐ AXIS 540/640 Quick Installation Guide, part no: 14679

☐ Product Brochure, part no: 14412

☐ AXIS UserGroup Registration Card, part no: 15119
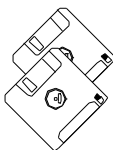
☐ 3.5" AXIS Utilities disk comprising the AXIS NetPilot Configuration Software and AXIS Print Utility for Windows, part no: 14428

☐ 3.5" OS/2 Utilities disk with AXIS Print Utility for OS/2, part no: 14232

☐ Power Supply:

Part no.	AXIS 540/540+ (PS-A)	AXIS 542/542+/640/642 (PS-B)
Europe	13599	13267
UK	12866	13268
Australia	12867	13269
USA	12919	13270
Japan	13249	13936

Optional accessories

- [ ] Self-adhesive velcro ribbons, part no: 13282 and 13283
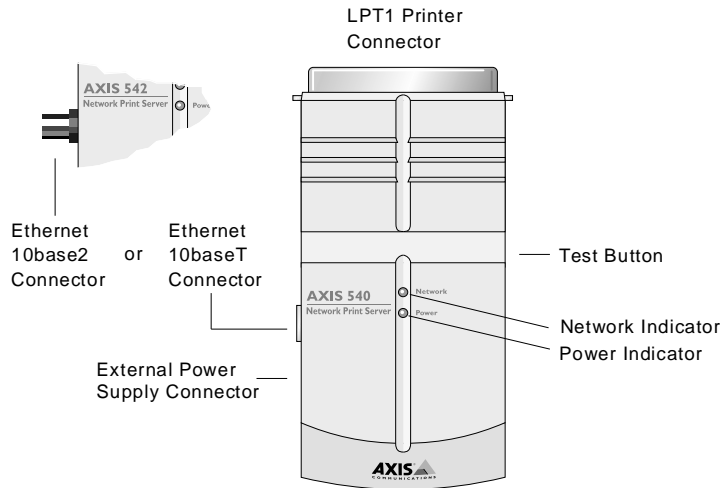- [ ] BNC T-adaptor (AXIS 542 only), part no: 12839
- [ ] Printer cable extension, part no: 13522

AXIS 540/542 Connectors

Plan view of the AXIS 540/542

Test Button   The test button is used for:

• Printing a test page to check the connection to the printer.
• Printing the parameter list showing all the AXIS 540/542 settings.
• Resetting the AXIS 540/542 parameters to the factory default settings.

Refer to *Appendix A - The Test Button* for more information about printing and resetting the parameters.
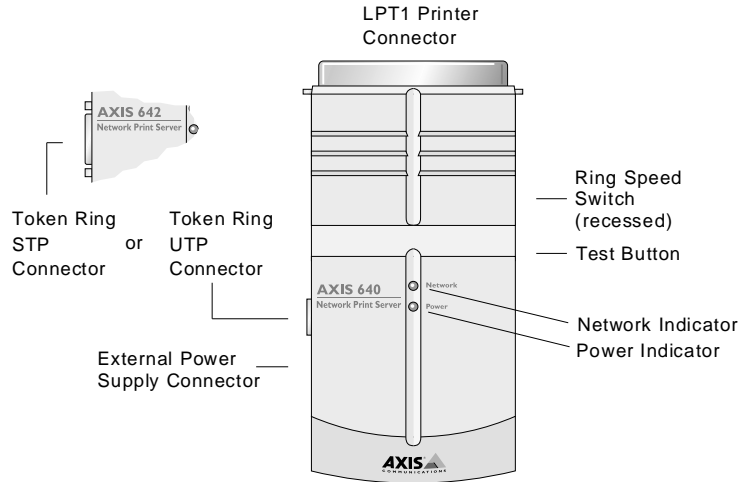
Network Indicator   This flashes to indicate network activity.

Power Indicator   Is normally on while power is applied. If it is not lit, or it flashes, there is a problem with the AXIS 540/542 or its power supply.

AXIS 640/642 Connectors

LPT1 Printer
Connector

AXIS 642
Network Print Server

Ring Speed
Switch
(recessed)

Test Button

Token Ring   Token Ring
STP   or   UTP
Connector   Connector

AXIS 640
Network Print Server

Network

Power

External Power
Supply Connector

Network Indicator
Power Indicator

AXIS

Plan view of the AXIS 640/642

Test Button	The test button is used for:

- Printing a test page to check the connection to the printer.
- Printing the parameter list showing all the AXIS 640/642 settings.
- Resetting the AXIS 640/642 parameters to the factory default settings.

Refer to *Appendix A - The Test Button* for more information about printing and resetting the parameters.

Ring Speed Switch	This switch is set to match your network speed.

Network Indicator	This flashes to indicate network activity.

Power Indicator	Is normally on while power is applied. If it is not lit, or it flashes, there is a problem with the AXIS 640/642 or its power supply.

Connecting Printers to the AXIS 540/640

Caution ☙✳ Make sure that the external power supply is marked with the correct mains voltage.

Connect a Printer:

1. Switch off the printer.

2. Connect the AXIS 540/640 to the printer, either directly to the parallel printer port, or using the optional velcro ribbons and printer cable extension.

3. Connect the external power supply to the AXIS 540/640. The indicators will flash during power up and self test. When the Network indicator stops flashing and remains off, the AXIS 540/640 is ready for use.

Test the Connection:

1. Switch on the printer.

2. Press and release the test button on the AXIS 540/640 to print a test page.

The test page shows the most important parameters as well as the firmware version number. But all you need to be concerned with at this stage is whether the test page has printed satisfactorily or not.

Note:

❏ The AXIS 540/640 supports high speed Centronics Communication. For use with older printers not supporting high speed, this function may be disabled by changing the parameter L1_CENTR as defined in *Appendix A - The Test Button*.

Connecting the AXIS 540/542 to the Ethernet Network
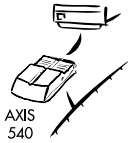
1. Switch off the printer and disconnect the AXIS 540/542 external power supply.

2. Note the AXIS 540/542 serial number found on the underside label of the print server. You need this number during the network configuration.

3. Connect your AXIS 540/542 to the network using a twisted pair (10baseT) or thin wire (10base2) cable.

4. Switch on the printer and connect the external power supply to the AXIS 540/542.

5. Successful connection of the AXIS 540/542 to your network will be confirmed by the intermittent flashing of the Network Indicator.

6. You are now ready to install your server onto your network using one of the methods detailed in the *Installation Guide*, on page 20. By commencing with the preferred installation method, you can further verify that your AXIS 540/542 is properly connected to your network.
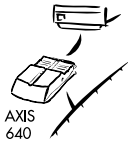
Note: ❏ Each AXIS 540/542 Print Server is pre-configured with a unique Node Address that is identical to the serial number. This can be changed using the AXIS NetPilot, or any standard Web browser, if required.

Connecting the AXIS 640/642 to the Token Ring Network

Caution ✏ DO NOT connect or disconnect the network cabling while the AXIS 640/642 is powered on.

1. Switch off the printer and disconnect the AXIS 640/642 external power supply.

2. Note the AXIS 640/642 serial number found on the underside label of the print server. You need this number during the network configuration.

3. Slide the Ring Speed switch towards 4 or 16 depending on the ring speed of your network.

4. Connect your AXIS 640/642 to the network using an STP (Media Type 1) or UTP (Media Type 3) cable.

5. Switch on the printer and connect the external power supply to the AXIS 640/642.

6. Successful connection of the AXIS 640/642 to your network will be confirmed by the intermittent flashing of the Network Indicator.

7. You are now ready to install your server onto your network using one of the methods detailed in the *Installation Guide*, on page 20. By commencing with your preferred installation method, you can further verify that your AXIS 640/642 is properly connected to your network.

Notes:
❏ Each AXIS 640/642 Print Server is pre-configured with a unique Node Address that is identical to the serial number. This can be changed using the AXIS NetPilot, or any standard Web browser, if so required.

❏ It is recommended that you use screened or foiled Media Type 3 cabling for 16 Mbit networks and <u>not</u> standard UTP cabling.

Basic Set Up of the Network

Installation Guide   After connecting the AXIS 540/640 to your network you are now
ready to perform the basic setup procedures. The method of
installation that you choose should be dictated by your printing
requirement and the type of network into which you are integrating.
Proceed with an appropriate installation method from the list below:

NetWare   • If you have access to a Windows platform which uses NetWare
you should firstly follow the procedures defined in:
- Basic Set Up with AXIS NetPilot, on page 22.
- Section 3 Setting Up - NetWare

UNIX   • Perform the basic TCP/IP set up procedures if your network uses
UNIX workstations, as defined in:
- Basic Set Up for TCP/IP, on page 25.
- Section 7 Setting Up - UNIX

Windows   • If your Windows platform uses NetBIOS/NetBEUI, use the
NetPilot only if you want to change the default print server name.
If this is unnecessary, proceed directly to:
- Section 4 Setting Up - Windows

If your Windows platform uses neither NetWare nor NetBEUI,
you must initially perform the basic TCP/IP set up procedures, as
defined in:
- Basic Set Up for TCP/IP, on page 25.
- Windows NT LPD Printing, Section 4

OS/2   • If your network uses OS/2 workstations, use the NetPilot only if
you want to change the default print server name. If this is
unnecessary, proceed directly to:
- Section 5 Setting Up - OS/2

Macintosh   • If the only workstations on your network are Apple computers,
you should refer directly to:
- Section 6 Setting Up - Macintosh

Web Based Management

If you are using the TCP/IP protocol suite and also have access to an Internet browser, you may manage the AXIS 540+, 542+ 640 and 642 models using HTTP, regardless of your system platform. Should you wish to use this easy-to-use configuration method, you should initially refer to:

• *Basic Set Up for TCP/IP*, on page 25. Refer then to:

• *Section 8 Web Based Management*

Installation Summary

The appropriate Installation, Management and Configuration tools for the AXIS 540/640 can be summarized in the following table:

Operating System Protocols	Installation	Configuration/ Management
IPX/SPX	AXIS NetPilot	AXIS NetPilot
TCP/IP (UNIX)	AXINSTALL	FTP, SNMP, Web browser
TCP/IP (Windows)	Use LPD Monitor/Spooler*	FTP, SNMP, Web browser
NetBIOS/NetBEUI (Windows)	AXIS Print Utility for Windows	AXIS NetPilot
NetBIOS/NetBEUI (OS/2)	AXIS Print Utility for OS/2	AXIS NetPilot
Apple EtherTalk	Standard using the Chooser	(**)

Recommended Installation, Configuration and Management tools

* You may use the resident LPD monitor in Windows NT to print via TCP/IP. A shareware LPR spooler is available for Windows 95, or Windows for Workgroups. You can download this software from **http://www.axis.com/techsup/**.

** Use Mac-FTP or HTTP. Alternatively use the AXIS NetPilot from a PC platform within the same network.

Notes: ❏ IPX/SPX: used in Novell NetWare

❏ TCP/IP: used in UNIX systems,Windows NT, Windows 95, Windows 3.11, Windows for Workgroups...

❏ NetBIOS/NetBEUI: used in Windows NT, Windows for Workgroups, Windows 95, LAN Server, LAN Manager

Basic Set Up with AXIS NetPilot

Follow the instructions on the AXIS Utilities disk label to install the AXIS NetPilot software on to your computer. AXIS NetPilot runs on any of the Windows platforms: Windows 3.x, Windows 95, Windows NT, Windows for Workgroups, or in a WinOS/2 window under OS/2.

When AXIS NetPilot is started, the program searches the network for new Axis units that have not yet been installed. If any new units are found the user is given the option of installing them.

The AXIS Installation Wizard Main window

The user is guided through the installation process by a _Wizard_ which asks for the relevant information concerning your network environment. You will find more information about AXIS NetPilot in _Section 3 Setting Up - NetWare._

Environments

When configuring the AXIS 540/640 for use on your network you may select any combination of the supported environments. In a multi-platform environment you may wish to enable printing from all of the supported environments: Netware, TCP/IP, Windows OS/2 or AppleTalk.

NetWare NDS

You may place NetWare Print Queues on a specific bindery server, or alternatively into a NDS Tree.

Print Queues

The default Print Queue names comprise of the print server name followed by the Port name:

Environment	Default name
NetWare	AXIS1A0003_LPT1_Q
Windows & OS/2	AX1A0003.LP1
AppleTalk	AXIS1A0003_LPT1

Example of default Print Queue Names for each of the operating environments

The Installation Wizard allows you to amend the default names if you wish.

The Internet Address

During the Installation Wizard you may choose the method the AXIS 540/640 employs for obtaining an Internet Address. ARP, RARP, BOOTP and DHCP are all supported. Refer to _page 27_, for more information on these methods.

Wizard   A special form of user assistance that automates a task (in this case the installation) through a dialog with the user. Wizards help the user to accomplish tasks that are complex and require experience, and even for the experienced user can help to speed up an operation.

Test Page   The final user prompt in the Installation Wizard allows you to print a test page through NetWare. This page displays the name of all the NetWare servers the AXIS 540/640 is connected to and shows the status of each connection. This will assist diagnosis in the event of a configuration error.

Notes: ❏   The parameters entered during installation are not permanent; they can be altered at any time according to your network printing requirements.

❏   No serious or permanent damage will be caused if you make a mistake during installation. If at any time you find that printing is not satisfactory, the parameters can easily be changed to tune the system to your requirements.

❏   For information on advanced functions, please refer to the AXIS Network Print Server Technical Reference. You may down-load this or other technical information over the Internet by accessing the Axis WWW Home Page at **http://www.axis.com/**. Refer also to *Appendix E - How To Contact Axis.*

Refer to one or more of the following sections to learn how you might fine tune the AXIS 540/640 configuration and manage your network printing. Proceed as is appropriate to your type of network.

Section 3   Setting Up - NetWare
Section 4   Setting Up - Windows
Section 5   Setting Up - OS/2
Section 6   Setting Up - Macintosh
Section 7   Setting Up - UNIX
Section 8   Web Based Management

Basic Set Up for TCP/IP

To establish communication with the TCP/IP network, an Internet address and a host name must be mapped to the Ethernet/Node address of your AXIS 540/640 Print Server. To do this, you must firstly acquire an unused Internet address and decide upon an appropriate and unique name for your AXIS 540/640. This information then must then be included into your system host table. The procedures for doing this are described below.

Before you start

System privileges
You will need root privileges on your UNIX system, or administrator privileges on a Windows NT server.

Ethernet address
You will need to know the Ethernet address of your AXIS 540/542 to perform the installation. The Ethernet address is based upon the serial number of your AXIS 540/542. This means that an AXIS 540/542 with a serial number of 00408C100086, will have a corresponding Ethernet address of 00 40 8C 10 00 86. The serial number of your unit is located on the underside label of the unit.

Node address
In Token Ring networks the node address is either the serial number found on the underside label of the AXIS 640/642 or a Locally Administrated Address.

<table>
<tr><td>

The Internet Address and Host Name in Your Host Table

</td><td>

Enter the Internet address and Host name into your host table using the following step-by-step instructions:

1. Acquire an unused Internet address from your Network Administrator and choose a unique name for your AXIS 540/640.

2. Add the Internet address and host name to your system host table. On most systems, this is done by appending the following line to the /etc/hosts file:

</td></tr>
</table>

```
<Internet address>                      <host name>
```

Example:

```
192.168.3.191                          npsname
```

3. Update your Alias Name data bases. If your system utilizes alias name data bases such as Yellow Pages (YP) or Network Information Services (NIS), you should update these. On most systems this is done by entering the following commands:

```
cd /var/yp
make
```

Caution ♣ DO NOT use the default or example Internet address when installing your AXIS 540/640. Always consult your Network Administrator before assigning an Internet address.

Set the Internet Address and Host Name

You may set the Internet address of the AXIS 540/640 in four different ways, using either arp, rarp, bootp, or dhcp. The main characteristics of each of these methods are described below:

- ARP - available in UNIX, Windows 95, and Windows NT. This is generally considered to be the easiest method although it does require the Internet address for each new device to be downloaded individually. It is not appropriate to use this method over routers.

- RARP - available in UNIX, it down-loads the Internet address to each device automatically. It requires a rarp daemon on your system, and operates within a single network segment only.

- BOOTP - available in UNIX and quite similar to rarp, although it can however operate on the entire network. Requires a BOOTP daemon on your system. A request made to an active BOOTP or RARP daemon initiates a search of the Ethernet Address Table (RARP daemon), or Boot Table (BOOTP daemon) for an entry matching the print server's Ethernet address. If a matching entry is found, the daemon then down loads the Internet Address to the print server.

- DHCP - available in Windows NT and UNIX systems, it allows for the automatic but temporary assignment of Internet addresses from a central pool. In the absence of either an active RARP or BOOTP daemon running on the host DHCP will, when enabled, cause the selected host to automatically allocate and down load a free Internet Address, Default Router Address and Net Mask to the requesting print server. It also provides validation data that defines how long the Internet addresses will remain valid.

The procedures for using each of the above methods are described in detail below.

Notes:

❏ DHCP is only available in "+" and Token Ring models.

❏ Please note that although it is recommended practice to refer to the host name when accessing your AXIS 540/640, it is perfectly acceptable to replace this name with the Internet address in all instances. Indeed, this becomes a necessity when:

- the host name has not been included in your system host table

- attempting to use the arp command in a Windows 95 or NT environment.

The latter point is demonstrated in the first of the examples below.

Using ARP in Windows 95, Windows NT

In both Windows 95 and Windows NT the Internet address can be set using the arp method. Perform the following commands to down-load the Internet address and verify correct Internet communication.

Windows

AXIS 540/542 Ethernet Print Server:

Start a DOS window. Type the following command:

```
arp -s <Internet address> <Ethernet address>
ping <Internet address>
arp -d <Internet address>
```

Example:

```
arp -s 192.168.3.191 00-40-8c-10-00-86
ping 192.168.3.191
arp -d <192.168.3.191>
```

The host will return `Reply from 192.168.3.191...` or some similar message. This indicates that the address has been set and the communication is established.

AXIS 640/642 Token Ring Print Server:

Start a DOS window. Type the following command:

```
arp -s 802.5 <Internet address> <node address>
ping <Internet address>
arp -d <Internet address>
```

Example:

```
arp -s 802.5 192.168.3.191 00-02-31-48-00-61
ping 192.168.3.191
arp -d <192.168.3.191>
```

The host will return `Reply from 192.168.3.191...` or some similar message. This indicates that the address has been set and the communication is established.

Notes:

❑ Due to a bug in the Windows 95 implementation of arp you must first, if you have an empty arp table (seen with arp -a), ping an existing unit on your network before setting the IP number of your AXIS 540/640.

❑ Please note that when you execute the ping command for the first time, you will experience a significantly longer response time than is usual.

❑ The `arp -d` command is advised so that the Internet to Ethernet address information is stored as a dynamic parameter within the host's cache memory. Failure to execute this command will mean that the mapping is static and consequently installed permanently on the host.

Using ARP in UNIX   You may also use the arp method for downloading the Internet
address within a UNIX environment:

AXIS 540/542 Ethernet Print Server:

UNIX

Type the following command:

```
arp -s <host name> <Ethernet address> temp
ping <host names>
```

Example:

```
arp -s npsname 00:40:8c:10:00:86 temp
ping npsname
```

The host will return `npsname is alive,` or some similar message.
This indicates that the address has been set and the communication is
established.

AXIS 640/642 Token Ring Print Server:

Type the following command:

```
arp -s 802.5 <host name> <node address> temp
ping <host names>
```

Where the node address is either the serial number found on the
underside label of the AXIS 640/642 or a Locally Administrated
Address.

Example:

```
arp -s 802.5 npsname 00:02:31:48:00:61 temp
ping npsname
```

The host will return `npsname is alive,` or some similar message.
This indicates that the address has been set and the communication is
established.

Notes: ❏ The arp command can vary between different UNIX systems. The 802.5 argument is only required for IBM AIX systems, and some BSD type systems expect the host name and node address in reverse order. Furthermore IBM AIX systems will require the additional argument ether. For example:

```
arp -s ether <host name> 00:40:8c:10:00:86 temp
```

❏ Please note that when you execute the ping command for the first time, you may experience a significantly longer response time than is usual.

Using RARP in UNIX   Follow the step-by-step procedure below to use the rarp method:

AXIS 540/542 Ethernet Print Server

UNIX

1. Append the following line to your Ethernet Address table. This is typically performed using the command `/etc/ethers`:

```
<Ethernet address> <host name>
```

Example:

```
00:40:8c:10:00:86 npsname
```

2. Update your host table and alias name databases, as described previously.

3. If it is not already running, start the rarp daemon. This is typically performed using the command `rarpd -a`.

4. Restart the AXIS 540/542 to down-load the Internet address.

AXIS 640/642 Token Ring Print Server

If you are a IBM AIX user, you will probably not have access to a rarp daemon. If this is the case, you may use either the arp or bootp methods instead.

1. Append the following line to your Node Address table. This is typically performed using the command `/etc/ethers`:

    ```
    <node address> <host name>
    ```

    Where the node address is either the serial number found on the underside label of the AXIS 640/642 or a Locally Administrated Address.

    Example:

    ```
    00:02:31:48:00:61 npsname
    ```

2. Update your host table and alias name databases, as described previously.

3. If it is not already running, start the rarp daemon. This is typically performed using the command `rarpd -a`.

4. Restart the AXIS 640/642 to down-load the Internet address.

Using BOOTP in UNIX

Follow these step-by-step procedure below to use the bootp method:

UNIX

1. Append the following entry to your boot table. This is typically performed editing the file: `/etc/bootptab`:

```
<host name>:ht=<hardware type>:vm=<vendor magic>:\
:ha=<hardware address>:ip=<Internet address>:\
:sm=<subnet mask>:gw=<gateway field>
```

Example for AXIS 540/542 /Ethernet:

```
npsname:ht=ether:vm=rfc1048:\
:ha=00408c100086:ip=192.168.3.191:\
:sm=255.255.255.0:gw=192.168.1.1
```

Example for AXIS 640/642 /Token Ring:

```
npsname:ht=tr:vm=rfc1048:\
:ha=000231480061:ip=192.168.3.191:\
:sm=255.255.255.0:gw=192.168.1.1
```

2. Update your host table and alias name databases as described previously.

3. If it is not already running, start the bootp daemon. This is typically performed using the command `bootpd`.

4. Restart the AXIS 540/640 to down-load the Internet address, default router address, and net mask.

Notes:
- ❏ The `ht` and `vm` fields must be entered exactly as in the example.
- ❏ The `ha` field is the Ethernet address and the `ip` field is the Internet address of your AXIS 540/640.
- ❏ The `gw` and `sm` fields correspond to the default router address and net mask (`DEF_ROUT` and `NET_MASK`).

Using DHCP in Windows

Follow these step-by-step procedure below to use the DHCP method:

1. Edit or create a scope in the DHCP manager of the DHCP daemon. The entries included into this scope should include the following:

Windows

   - range of IP addresses

   - subnet mask

   - lease duration

   - default router IP address

2. Activate the scope

3. Enable the DHCP_ENB parameter in the Configuration file of the AXIS 540/640 using AXIS NetPilot or any other preferred method.

Note: ❏ DHCP is only available in "+" and Token Ring models.

Section 3   Setting Up - NetWare
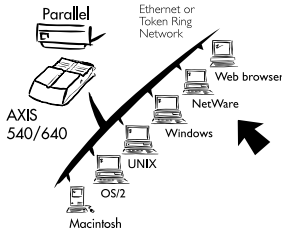
If you have not already done so, you should use the Installation Wizard in AXIS NetPilot to install your network print server; refer to *Section 2 - Basic Installation.*

After performing the basic installation, the AXIS 540/640 is ready for printing within the NetWare environment. This section provides information for making further adjustments to the configuration.

If you intend to operate your AXIS 540/640 in a multiprotocol environment, you should also proceed to the other relevant sections in this manual, namely:

Section 4   Setting Up - Windows
Section 5   Setting Up - OS/2
Section 6   Setting Up - Macintosh
Section 7   Setting Up - UNIX
Section 8   Web Based Management

Set Up using the AXIS NetPilot

You may use the AXIS NetPilot to:

• set up the print queues, printers, and print servers.

• set up the configuration parameters of the AXIS 540/640.

• monitor the printers on the network.

Notes: ❏ AXIS NetPilot contains an extensive on-line help facility to assist you with any of the operations listed above.

❏ The AXIS NetPilot software is designed to set up a range of different network environments. Therefore you will encounter windows that are relevant to other systems as well as NetWare.

Caution ☛ Any network configuration should involve the Network Administrator.

Using AXIS NetPilot to Manage your Print Servers

By opening folders from within the left hand pane of the AXIS NetPilot main window you can:

- from 'Network Print Servers' select any installed network print server that you wish to configure, or

- from 'New Axis Units' select any Axis network print server that you wish to install using the Installation Wizard, or

- from 'Monitoring Printers' select any group of printers that you wish to monitor.
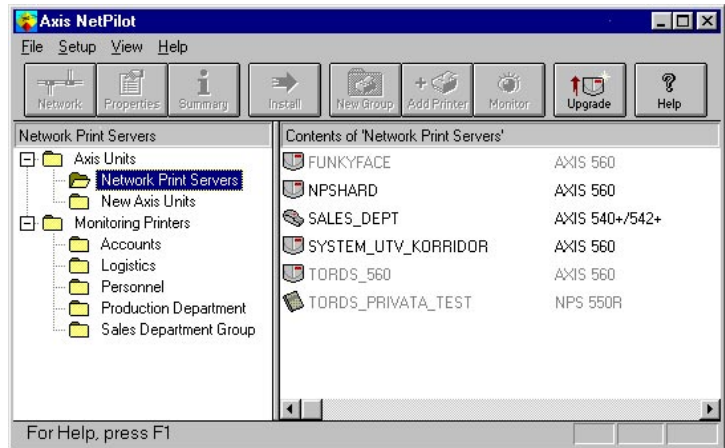
AXIS NetPilot's main window
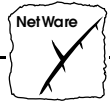
Managing Printers and Print Queues

Having installed your AXIS 540/640 print server in accordance with the basic installation procedures described in *Section 2 - Basic Installation*, your AXIS 540/640 should now feature in the Contents of 'Network Print Servers' pane of the AXIS NetPilot Main window.

Examine Queues and Servers

The NetWare Network Environment window detailed below, allows you to examine all Print Queues and NetWare Print Servers connected to the AXIS 540/640.

To gain access to this window, simply select the required Network Print Server from AXIS NetPilot Main window, and then choose Network from the Setup menu. Alternatively, you may click on the Network Icon on the Toolbar. If you are not already, a dialog box will then ask you to log on to your NetWare file server
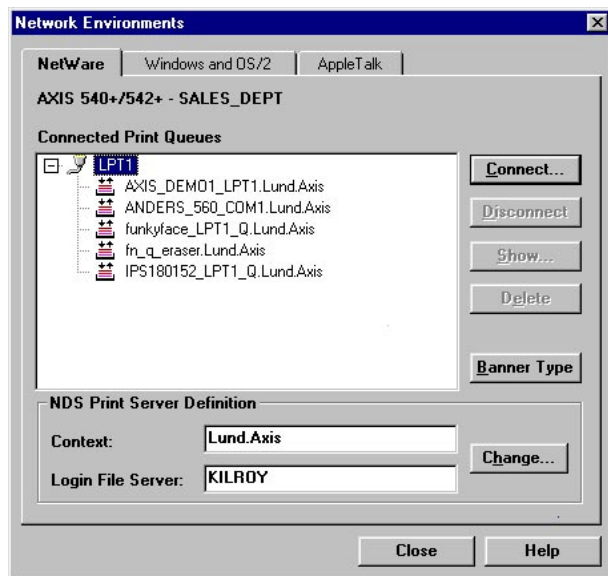
The AXIS NetPilot NetWare Network Environment window

The AXIS 540/640 periodically updates the configuration by searching the NDS tree or, in the case of NetWare versions 3.x, the file servers.
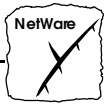
Print Queue
Connection

To connect a print queue to a print server port, select the print server port you wish to connect from the NetWare Network Environment window. Click Connect...

The Connect NetWare Print Queues window detailed below, will then be displayed.
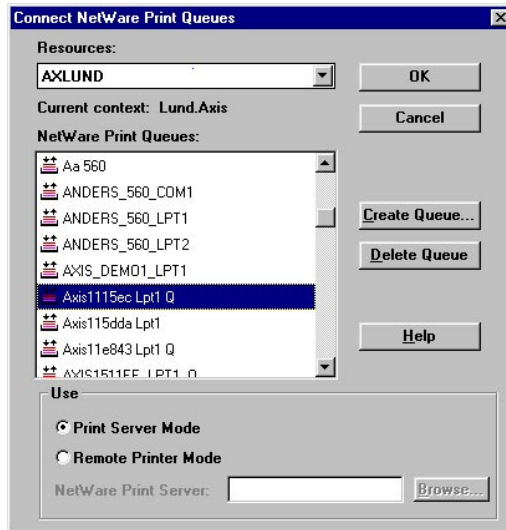
The AXIS NetPilot Connect NetWare Print Queues window

Select the location of the print queue from the Resources box. Click either on an existing NetWare print queue for connection to the server port, or alternatively create a new print queue by clicking on Create Queue...

To define the method of printing to be used, select either Print Server Mode or Remote Printer Mode. If you use Remote Printer Mode you must enter the NetWare Print Server name, or make an appropriate selection that will work with the AXIS 540/640 print server, using the Browse... button.

Finally click the OK button to return to the Network Environments window.
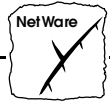
Configuring via the Property Pages

Select the required Network Print Server and then Properties from the Setup menu in the NetPilot Main window, or alternatively click the Properties Icon on the Toolbar. A comprehensive set of *Property Pages* are then presented with an appropriate array of selection tabs.
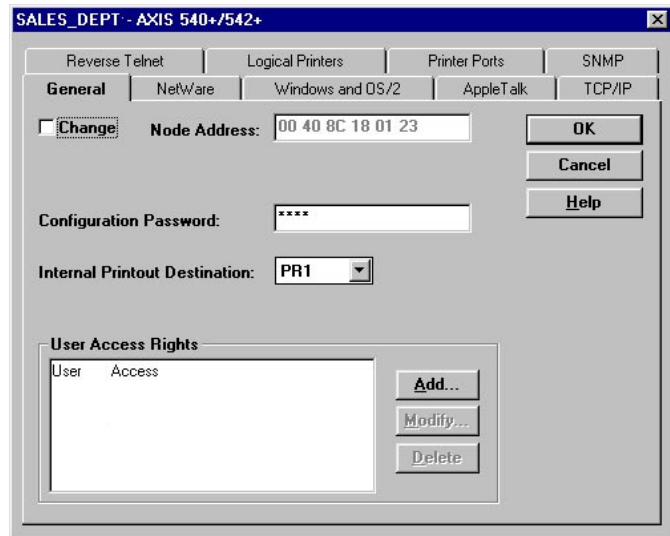
A Property Page showing general parameters to be set

AXIS 540/640 Modes

The AXIS 540/640 can run in either Print Server Mode or Remote Printer Mode. The following overview explains the advantages and limitations of each mode.

Property Pages: This is AXIS NetPilot's way of allowing you to inspect and change any of the AXIS 540/640 parameters. There are different Property Pages for each of your network environments. Simply click the NetWare tab to gain access to the NetWare configuration.
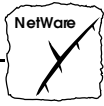
Print Server Mode

In this mode the AXIS 540/640 logs in to a file server(s) and repeatedly polls the print queues for print jobs. In this fashion, the AXIS 540/640 emulates a NetWare print server, that is a workstation running PSERVER. It provides high printing speed with low network load and is the recommended mode for medium to large sized networks. Each print server in PSERVER mode will occupy one NetWare license.

Advantages

- Easy to set up.

- High performance (typically 150-400 kbytes/s).

Limitations

- Requires a NetWare user licence for each AXIS 540/640 to file server link.

Remote Printer Mode

In this mode the AXIS 540/640 connects itself to a PSERVER NetWare program running on the file server, or alternatively to a dedicated workstation running PSERVER.EXE. It then automatically receives print jobs from the file server. In this fashion, the AXIS 540/640 emulates a workstation running the NetWare remote printer software RPRINTER, or NPRINTER. This mode is only recommended for small networks where the number of NetWare user licences is a major issue.

Advantages

- NetWare user licences are not required.

- Easy to set up.

Limitations

- Lower performance, e.g. typically 20 - 70 kbytes/s for NLM.

- Higher network load.
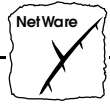
**Monitoring the
Printers**

For the purpose of printer monitoring the AXIS NetPilot allows users
to create groups of printers. The printers comprising each group may
then be displayed in the AXIS NetPilot window. To examine the
status of any printer within a group, simply click on the appropriate
group folder icon. The status of each printer within a group is
displayed and also denoted by a relatively colored icon.

Any number of printer groups can be created and unwanted groups
can be deleted. Similarly, individual printers can be included or
deleted from any group. A printer may also be included in more than
one group, if required.
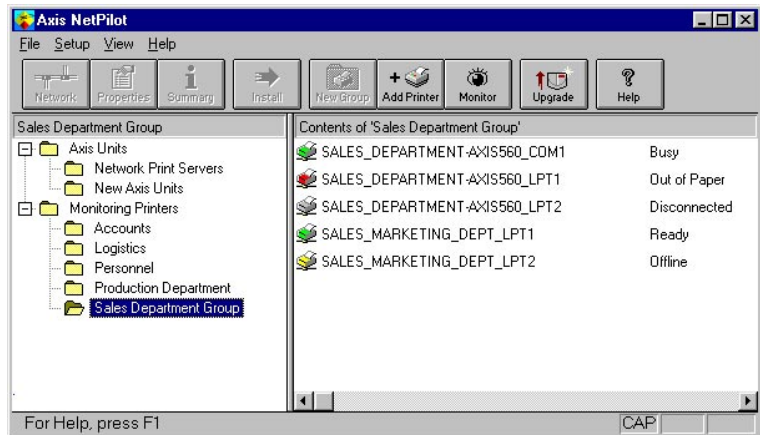
AXIS NetPilot's Monitoring Window

# Other NetWare Configuration Methods

Novell Utilities   After installing the AXIS 540/640 into the NetWare environment using the AXIS NetPilot, adjustments to the configuration can be made at any time, using the AXIS NetPilot. Alternatively, you may wish to manage the AXIS 540/640 using either Novell's NetWare Administrator, or PCONSOLE.
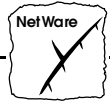
Some useful features provided by the NetWare Administrator are described in more detail below:

Printer Status   The NetWare dialog Printer Status menu detailed below, shows the status of an active print job serviced by an AXIS 540/640 network print server. Detailed information concerning the active job is displayed including, Print Queue, print job description, size of print file, percentage of job completed, etc. The administrator also has the ability to abort or pause the print job from this menu.
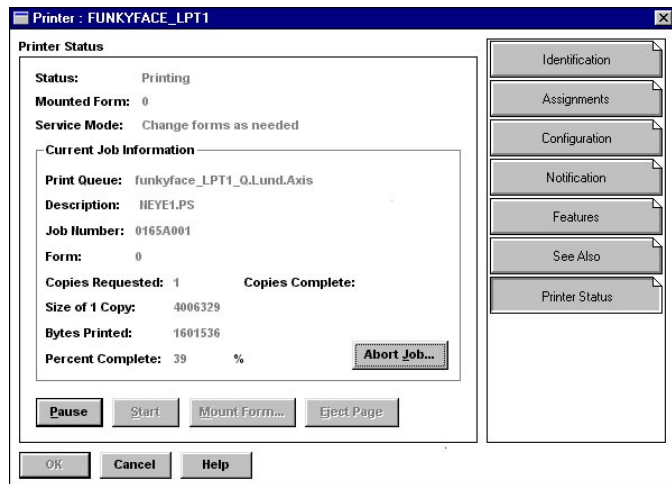
NetWare Administrator Printer Status Menu

Notification

Using the NetWare Administrator you may also enable/disable status notification messages for printers connected to the AXIS 540/640, i.e. Busy, Offline, Out of paper, Paper jam...etc. Print job owners and chosen administrators may be added or removed from the list of persons to be notified.

Print Layout

A print layout of installed AXIS 540/640 Network Print Servers and their relative print queues may be viewed for any NetWare Organisational Unit. Summary information is also displayed simply by right-clicking on the printer object you wish to examine.
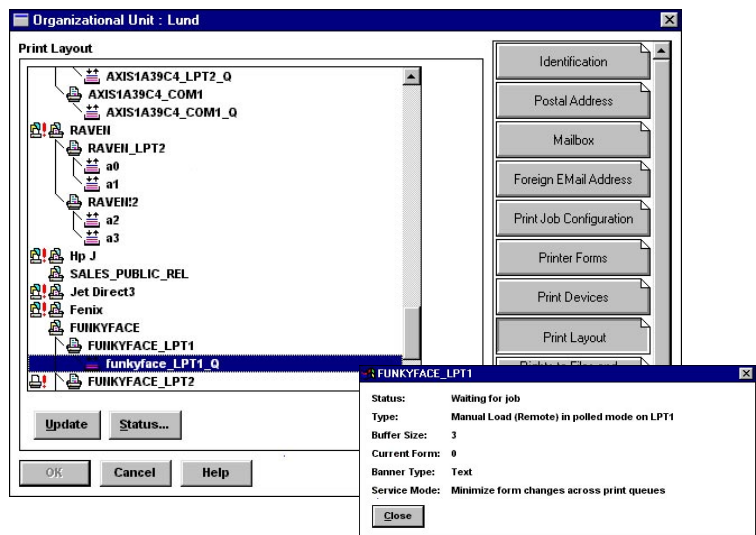
NetWare Print Layout with corresponding summary information

Web Browser   If your network supports TCP/IP, you may configure the AXIS
540+/542+/640 and 642 models for operation within the NetWare
environment, using any standard Web browser. From the AXIS
NetWare Configuration Page you have the ability to change any
NetWare parameter. You can also monitor the status of your print
jobs, download software updates and access useful information. Refer
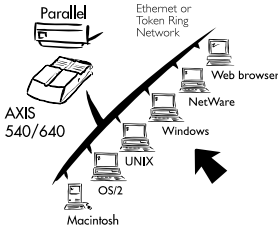to *Section 8 - Web Based Management* for further information.
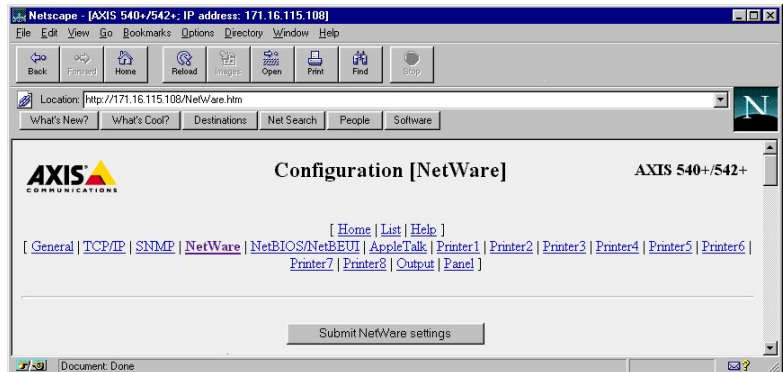
The AXIS 540+/542+ NetWare Configuration Page

FTP   FTP provides another method for configuring the AXIS 540/640. For
further information refer to *Editing using FTP,* on page 98.
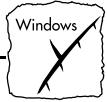
Section 4 Setting Up - Windows

Having connected the AXIS 540/640 to your network, this section now describes how to set up your AXIS 540/640 for printing in the Windows environment.

The following Windows platforms are supported:

- Windows 3.1 (requires add-on network support, see page 47)
- Windows for Workgroups
- Windows 95
- Windows NT

If you intend to use the AXIS 540/640 in a multiprotocol environment, you should also proceed to other relevant sections in this manual, namely:

Section 3   Setting Up - NetWare
Section 5   Setting Up - OS/2
Section 6   Setting Up - Macintosh
Section 7   Setting Up - UNIX
Section 8   Web Based Management

Installation Using AXIS Print Utility for Windows

Unless you wish to change the default name of your AXIS 540/640, the setup operation may be performed solely with the AXIS Print Utility for Windows, which is supplied on the AXIS Utilities disk. You should install this utility now if you have not already done so - see the instructions on the AXIS Utilities disk label.

If you wish, you may change the default name of your AXIS 540/640 or amend any of the default parameters, using the AXIS NetPilot, or any standard Web browser. Refer to *Section 8 - Web Based Management*.

Note: ❏ The AXIS Print Utility for Windows is not needed on the client platforms for client-server printing.
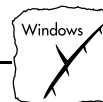
About AXIS Print Utility for Windows

AXIS Print Utility for Windows is a dual purpose application for network printing in the Windows environment. It has two fundamental purposes:

1. Install and maintain AXIS 540/640 printer ports as Windows printer ports.

2. Capture and monitor print jobs directed to the AXIS 540/640 ports. Print jobs are directed through a spool directory either at your local hard disk (peer-to-peer mode), or at the file server (client-server mode). The printer port status of your AXIS 540/640 may be monitored and pop-up notification messages can be generated, keeping you informed of completed print jobs or any problematic condition.

For more information about AXIS Print Utility for Windows, see the on-line help.

Notes: ❏ Microsoft Network (NetBIOS/NetBEUI) must be running when using AXIS Print Utility for Windows.

❏ AXIS Print Utility for Windows must be running when printing in peer-to-peer mode.

Peer-to-Peer vs. Client-Server Printing

All users requiring access to a network printer in peer-to-peer mode will need to install the AXIS Print Utility for Windows software onto their workstation. Users may then add the required network printer to their systems and use the printer as if it was connected directly to their workstation. Peer-to-peer printing affords the following benefits:

• You can monitor the printer status at all times and be notified when a print job is complete.

• You do not have to rely on a server.

Client-server operation requires only one user to install the AXIS Print Utility for Windows software onto their workstation. This user then adds the printer to his or her workstation (the server) and shares the printer with other users on the network. The other users (the clients) may connect to the printer through the server via the Windows Print Manager in Windows 3.1 and NT platforms, and the System Printers folder in Windows 95 platforms.
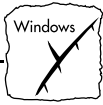
The client-server mode provides a way of maintaining queue ordering and job priority, but at a price. This is because:

• You cannot receive printer status or print job notification.

• The workstation set up as the server must be available at all times. It must also have the capacity to handle the print jobs that pass through it.

Notes: ❏ When using the client-server mode, other users may still install the AXIS Print Utility for Windows software, for printing directly to the network printer in Peer-to-Peer mode.

❏ When using the client-server mode, it is recommended that the server is setup only on a Windows for Workgroups workstation.

Windows 3.1

In order to print to a network printer, Windows 3.1 requires the installation of network support, such as the LAN Server or LAN Manager Workstation software. When installed, proceed as described under Windows for Workgroups below.
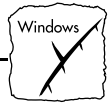
Windows for Workgroups

Setup for Peer-to-Peer Printing

Follow these steps to install your AXIS 540/640 for peer-to-peer printing at a Windows for Workgroups workstation:

1. Double-click the AXIS Print Utility icon.

2. In the Port menu, click Add.

3. In the NPS Port list, select the AXIS 540/640 port to be installed. The port will appear as <name>.LP1, where <name> is AX followed by last six digits of your print server number e.g. AX100086.LP1. However, this alphanumeric name will be superseded by any new name given to your AXIS 540/640 when using AXIS NetPilot.

4. Accept or change the suggested Windows port name and type any required comment in the Description field. Make a note of the Windows port name as you will need this later, then click OK to install the Windows port.

5. In the Port menu, click Connect... to bring up the Windows Printers dialog.

6. Select a printer driver from the list of Installed Printers (or click Add>> to install a new driver), then click Connect...

7. Select the Windows port name from step 4 above (this name can be found at the bottom of the Ports list).

8. Click OK to close the Connect dialog, and Close to close Printers.

The setup is completed and you can now print through your AXIS 540/640.

Note: ❏ AXIS Print Utility for Windows must be running when you print through your AXIS 540/640. We strongly recommend that you copy the AXIS Print Utility icon into your StartUp folder.
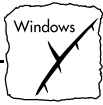
**Client-Server Printing:
Server Setup**

Follow these steps to install your AXIS 540/640 for client-server printing at a Windows for Workgroups server:

1. Choose a workstation that you want to use as server for network printing. The server must be available at all times and must have sufficient hard disk space for spooling print jobs.

2. Make sure that the printer sharing option is enabled. (Open Network Setup, click Sharing..., check the 'I want to be able to allow others to print to my printer(s)' box).

3. Install AXIS Print Utility for Windows on the server.

4. Set up your AXIS 540/640 as described under *Setup for Peer-to-Peer Printing,* on page 53.

5. Open Print Manager and select your printer.

6. In the Printer menu, select Share Printer As...

7. Type a printer name in the Share As field (this is the printer name seen by the clients, see Client Setup below).
Check the Re-share at Startup box, then click OK.

The server setup is now completed. Set up the clients as described below.

Note: ❑ The AXIS Print Utility for Windows must be running when you print through your AXIS 540/640. We strongly recommend that you copy the AXIS Print Utility icon into your StartUp folder.

Client-Server Printing:
Client Setup

Follow these steps to use your AXIS 540/640 for client-server printing at a Windows for Workgroups client:

1. In the Control Panel, select Printers.

2. Select a printer driver from the list of Installed Printers (or click Add>> to install a new driver), then click Connect...

3. Select Network...

4. In the Device Name list, select a local port (LPT1- LPT3) to redirect to your network printer.

5. In the Show Shared Printers on list, select the server from Server Setup above.

6. In the Shared Printers list, select the printer you want to use.

7. Click OK, OK and Close, then exit Control Panel.

The client setup is completed and you can now print through your AXIS 540/640.
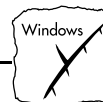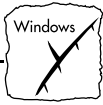
Windows 95

Setup for Peer-to-Peer Printing

Follow these steps to install your AXIS 540/640 for peer-to-peer printing at a Windows 95 workstation:

1. Double-click the AXIS Print Utility icon.

2. In the Port menu, click Add.

3. In the NPS Port list, select the AXIS 540/640 port to be installed. The port appears as <name>.LP1, where <name> is AX followed by last six digits of your print server number e.g. AX100086.LP1. However, this alphanumeric name will be superseded by any new name given to your AXIS 540/640 when using AXIS NetPilot.

4. Accept or change the suggested Windows Port name, and type any required comment in the Description field. Make a note of the Windows port name as you will need this later, then click OK to install the Windows port.

5. In the Port menu, click Connect to bring up the Printers folder.

6. Double-click the Add Printer icon. The Add Printer Wizard will then guide you through the installation. Click Next to proceed.

7. Choose Local Printer, then click Next.

8. Choose Manufacturer and Printer, then click Next.

9. Select the Windows port name from step 4, then click Next.

10. Accept or change the suggested Printer Name, then click Next.

11. Click Finish to complete the installation.

The setup is completed and you can now print through your AXIS 540/640.

Note: ❑ AXIS Print Utility for Windows must be running when you print through your AXIS 540/640. We strongly recommend that you establish a shortcut to the AXIS Print Utility within your StartUp file.

**Client-Server Printing:
Client Setup**

To print in client-server mode from within a Windows 95 environment, it is necessary to setup the server on a Windows for Workgroups workstation. Refer to *Client-Server Printing: Server Setup,* on page 49.

Follow these steps to use your AXIS 540/640 for client-server printing at a Windows 95 client:

1. Open the Network Neighborhood folder and select the server being used by the printer. Refer to Client-Server Printing: Server Setup on page 49.

2. Select the printer, and follow the Add Printer Wizard to setup the printer on your client.

The client setup is completed and you can now print through your AXIS 540/640.
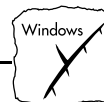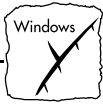
Windows NT

Setup for Peer-to-Peer Printing

Follow these steps to install your AXIS 540/640 for peer-to-peer printing at a Windows NT workstation:

1. Double-click the AXIS Print Utility icon.

2. In the Port menu, click Add.

3. In the NPS Port list, select the AXIS 540/640 port to be installed. The port appears as <name>.LP1, where <name> is AX followed by last six digits of your print server number e.g. AX100086.LP1. However, this alphanumeric name will be superseded by any new name given to your AXIS 540/640 when using AXIS NetPilot.

4. Accept or change the suggested Windows Port name, and type any comments in the Description field. Make a note of the Windows Port name as you will need this later, then click OK to install the Windows Port.

5. In the Port menu, click Connect to bring up Print Manager.

6. In the Printer menu, click Create Printer.

7. Type a name in the Printer Name field, select a suitable printer driver from the Driver list, and select Other... in the Print to list.

8. In the Print Destinations dialog, select Local Port, then click OK.

9. In the Port Name field, type: C:\~\<port>
   where C:\~ is your spool directory, and <port> is the Windows Port name from step 4. Click OK.

10. Close the Print Manager.

The setup is completed and you can now print through your AXIS 540/640.

Note: ❑ AXIS Print Utility for Windows must be running when you print through your AXIS 540/640. We strongly recommend that you copy the AXIS Print Utility icon into your StartUp folder.

Client-Server Printing:
Client Setup

To print in client-server mode from within a Windows NT environment, it is necessary to setup the server on a Windows for Workgroups workstation. Refer to *Client-Server Printing: Server Setup,* on page 49.

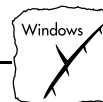Follow these steps to use your AXIS 540/640 for client-server printing at a Windows NT client:

1. Open Print Manager.

2. In the Printer menu, select Connect to Printer...

3. In the Shared Printers list, select the printer you want to use. Click OK.

The client setup is completed and you can now print through your AXIS 540/640.

Windows NT - LPD Printing

This section describes how to set up a Windows NT Server (ver. 3.5 or later) for LPD printing over the TCP/IP protocol.

If you have not already done so, you should perform the TCP/IP basic setup procedures prior to installing a printer for LPD printing. These procedures are defined in *Basic Set Up for TCP/IP,* on page 25.

Install the TCP/IP Protocol Stack

In the Control Panel, click the Network icon. If the TCP/IP Printing entry appears, then TCP/IP is already installed. Close the Network folder and skip to *Installing a Printer* below.
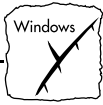
Follow these steps to install the TCP/IP protocol stack:

1. In the Control Panel, select Network.
2. Click Add Software..., select "TCP/IP Protocol and related components" and click Continue.
3. Check the "TCP/IP Network Printing Support" and click Continue.
4. Select path and then click Continue.
5. Click OK in the Network Settings dialog box.

Installing a Printer

Proceed as follows to install a printer for LPD printing.

1. In the Control Panel, click the Print Manager.
2. In the Printer menu, select Create Printer.
3. In the Printer Name field, type a name for your printer.
4. Choose a printer driver suitable for your printer.
5. In the Print to field, select Other...
6. In the Print Destinations dialog, choose LPR Port, then click OK. The Add LPR Compatible Printer dialog now appears.
7. In the Name or Address field, type the IP address or the alias name of your AXIS 540/640.
   Note: If you use an alias name, this must be defined in the *hosts* file on your server prior to the installation. This file is normally located in */winnt35/system32/drivers/etc/hosts*.
8. In the Name of Printer on the Machine field, type the logical printer number you want to use, e.g. pr1. Click OK.
9. Click OK to complete the installation.

Other Windows Configuration Methods

AXIS NetPilot
After installing your printers using the AXIS Print Utility for Windows adjustments to the AXIS 540/640 configuration can be made at any time using the AXIS NetPilot.

Web Browser
If your network supports TCP/IP, you may alternatively configure the AXIS 540+/542+/640 and 642 models for operation within the Windows environment, using any standard Web browser. Any Windows parameter in the Configuration file may be amended from within the NetBIOS/NetBEUI Configuration Page. Refer to *Section 8 - Web Based Management* for further information.
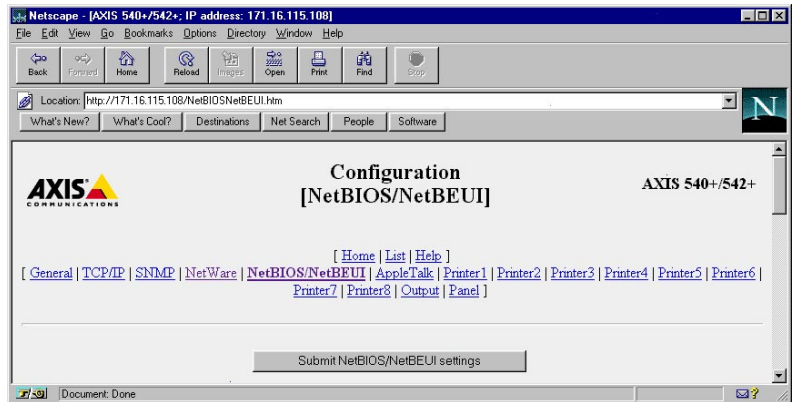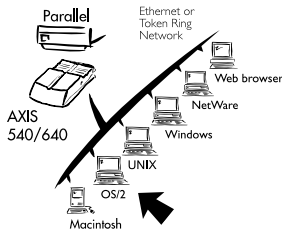

The AXIS 540+/542+ NetBIOS/NetBEUI Configuration Page

FTP
FTP provides another method for configuring the AXIS 540/640. For further information refer to *Editing using FTP,* on page 98.

Section 5 Setting Up - OS/2

Having connected the AXIS 540/640 to your network, this section now describes how to set up your AXIS 540/640 for printing in the OS/2 environment.

If you intend to operate your AXIS 540/640 in a multiprotocol environment, you should also proceed to the other relevant sections in this manual, namely:

Section 3   Setting Up - NetWare

Section 4   Setting Up - Windows

Section 6   Setting Up - Macintosh

Section 7   Setting Up - UNIX

Installation Using AXIS Print Utility for OS/2

The installation and setup operations are performed with the AXIS Print Utility for OS/2. You should install this utility now if you have not already done so - see the instructions on the OS/2 Utilities disk label.

Should you require to change the default name of your AXIS 540/640 or amend any of default parameters use the AXIS NetPilot from any Windows platform that is connected to your network, or WinOS/2 window under OS/2.

The AXIS Print Utility for OS/2 is not needed on the client platforms when using a client-server configuration.
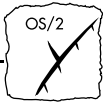
**About AXIS Print
Utility for OS/2**

AXIS Print Utility for OS/2 is a dual purpose application for network printing in the OS/2 environment. Its fundamental purpose is to:

1. Install and maintain the AXIS 540/640 printer port as an OS/2 printer port.

2. Capture and monitor print jobs directed to the AXIS 540/640 port. Print jobs may be directed through a spool directory either at your local hard disk, or at the file server. The printer port status of your AXIS 540/640 may be monitored and pop-up notification messages can be generated, keeping you informed of completed print jobs or any problematic condition.

Note: ❑ The NetBEUI protocol must be active. If not, use MPTS/LAPS (LAN Server) or SETUP (LAN Manager) to activate it.

**Install the AXIS
540/640**

1. When AXIS Print Utility for OS/2 is running, click Install to install your AXIS 540/640. It will then appear in the list as <name>.LP1, where <name> is AX followed by last six digits of your print server number. e.g. AX100086.LP1. However, this alphanumeric name will be superseded by any new name given to your AXIS 540/640 when using AXIS NetPilot.

2. Select the port that you wish to install, then click Install.

Repeat this procedure for each server using the AXIS 540/640.

Note: ❑ The AXIS Print Utility for OS/2 must be running in order to print using your AXIS 540/640.
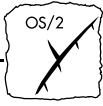
Integrating your AXIS 540/640 into the OS/2 Environment

Create a Print Queue (OS/2 version 1.x)

1. Double-click the Print Manager icon, click Setup, then select Printers...

2. Click Add to make a new printer definition, then type a name of your choice in the Name field.

3. Select \PIPE\<name>.LP1 from the Device list, then select a printer driver suitable for your printer.

4. Click Add, then click OK to confirm the printer definition.

5. Click Setup, then select Queues...

6. Click Add to create a print queue, and type a name in the Name field.

7. Click Add, then click OK to confirm the queue definition.

Create a Print Queue (OS/2 version 2.x and OS/2 Warp)

1. Double-click the Templates folder, then drag the Printer icon out to the Workplace Shell (or into a folder) while holding the right mouse button down.

2. Type a name of your choice in the Name field.

3. Select \PIPE\<name>.LP1 from the Port list, and select a printer driver suitable for your printer from the Standard Printer list.

4. Click OK to confirm the printer definition.

Share the Print Queue

A print queue must be made a shared resource before it can be accessed from other computers (clients or other servers).
Open an OS/2 window and issue the following command:

NET SHARE <queue_name> /PRINT

Where <queue_name> is the name of the queue created above.

To share a printer resource when using OS/2 Warp with IBM Peer service, follow the steps below:

1. Click the right mouse button on the printer object.

2. Select Share and then Start sharing. In the dialogue box, enter a Description.

3. Select the check-box Start sharing at LAN workstation startup.

4. Click OK.

To share a printer resource when using LAN server 4.0, follow the steps below:

1. Open LAN Server Administration.

2. Open your domain and then Resource Definition.

3. Drag and drop a printer from the template.

4. Enter the Alias name, select a Server name and the previously created Spooler Queue Name.

5. Click OK

The setup is completed and you can now print through your AXIS 540/640.

Other OS/2 Configuration Methods

AXIS NetPilot   After installing your printers using the AXIS Print Utility for OS/2, adjustments to the AXIS 540/640 configuration can be made at any time using the AXIS NetPilot.

Note: ❏   The AXIS NetPilot runs in a WinOS/2 window.

Web Browser   If your network supports TCP/IP, you may alternatively configure the AXIS 540+/542+/640 and 642 models for operation within the OS/2 environment, using any appropriate Web browser, e.g. Netscape Navigator for OS/2 Warp. Any OS/2 parameter in the Configuration file may be amended from within the NetBIOS/NetBEUI Configuration Page. Refer to *Section 8 - Web Based Management* for further information
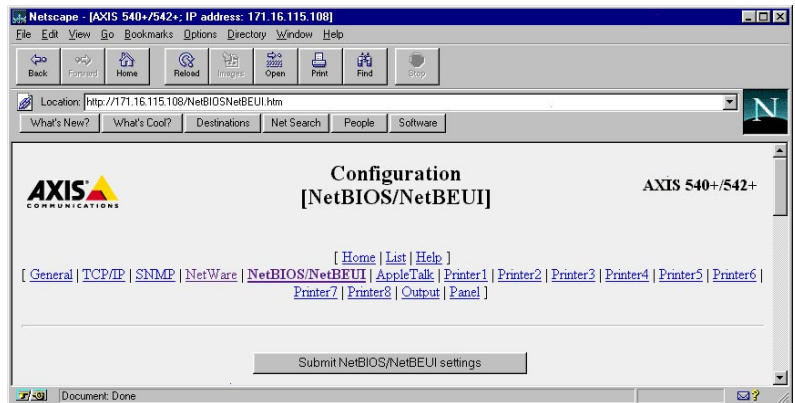
The AXIS 540+/542+ NetBIOS/NetBEUI Configuration Page

FTP   FTP provides another method for configuring the AXIS 540/640. For further information refer to *Editing using FTP,* on page 98.
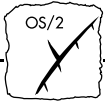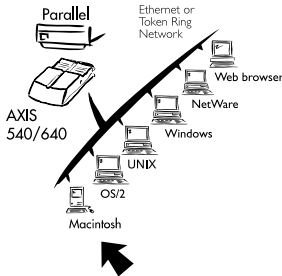
Section 6 Setting Up - Macintosh

Note: ❏ Please note that this section applies only to the print servers supporting the Apple EtherTalk environment, i.e. AXIS 540+ and AXIS 542+.

Having connected the AXIS 540+/542+ to your network, this section now describes how to set up your AXIS 540+/542+ for printing in the AppleTalk environment.

If you intend to operate your AXIS 540+/542+ in a multiprotocol environment, you should also proceed to the other relevant sections in this manual, namely:

Section 3   Setting Up - NetWare
Section 4   Setting Up - Windows
Section 5   Setting Up - OS/2
Section 7   Setting Up - UNIX
Section 8   Web Based Management

Installation Using the Chooser Window

Basic Configuration

The basic configuration in the Apple EtherTalk environment is performed simply by opening the *Chooser* window and selecting a printer.

Chooser: Selecting chooser from the Apple menu initiates a search for available printers on the network. The available printers, both physical and logical, are then subsequently displayed with the names given them during configuration. Default names are shown, unless they have been modified.

You may change the default name of your AXIS 540+/542+ or amend any of default parameters if you wish. However, to access the *config* file from a Macintosh you will need FTP support such as MacTCP, Fetch or Anarchie. This is described in more detail at the back of this section.

Choosing a Printer

Selecting a Printer

The method of choosing a printer will vary depending on which version of LaserWriter printer driver you are using.

- The LaserWriter 7.0 driver assumes that you use a standard PostScript driver, and cannot take advantage of any printer specific features.

- The LaserWriter 8.0 driver uses PPD files that contain printer descriptions. This gives you full control over any features your printer might have.

LaserWriter 7.0
Printer Driver

Open the Chooser window by starting the Chooser from the Apple menu. Follow these steps to choose a printer:

1. Click the LaserWriter icon.

2. If your network has more than one zone, click on the zone you want. If your network has no zones, this box does not appear.

3. Click the name of the printer you want.
   The default AXIS 540+/542+ printer names are shown as: AXIS<nnnnnn>_<port>, where <nnnnnn> is the last six digits of the AXIS 540+/542+ serial number, and <port> is LPT1. For example: AXIS100086_LPT1

4. Click the close box.
   This completes the configuration and closes the Chooser.

Repeat this procedure for each Macintosh on the network using the AXIS 540+/542+.

LaserWriter 8.0
Printer Driver

Open the Chooser window by starting the Chooser from the Apple menu. Follow these steps to choose a printer:

1. Click the LaserWriter 8.0 icon.

2. If your network has more than one zone click on the zone you want. If your network has no zones, this box does not appear.

3. Click the name of the printer you want.
   The default AXIS 540+/542+ printer names are shown as: AXIS<nnnnnn>_<port>, where <nnnnnn> is the last six digits of the AXIS 540+/542+ serial number, and <port> is LPT1. For example: AXIS100086_LPT1

4. Click the 'Setup...' button, and then the 'Auto Setup' button. If the printer supports bi-directional printing and the appropriate PPD file is available, the installation will now be performed automatically and you should proceed directly to step 6. However, if this is not the case, the PPD file must then be selected manually, as described in step 5.

5. Choose the PPD file matching your printer, and click 'OK'. If your printer does not appear in the PPD file list, contact your printer vendor. You may also use the Generic PPD if you do not need any printer specific features.

6. Click 'OK', and then click the close box. This completes the configuration and closes the Chooser.

Repeat this procedure for each Macintosh on the network using the AXIS 540+/542+.

Bi-directional support

The AXIS 540+/542+ allows the print-driver in the Macintosh to directly communicate with the printer and consequently provides the Mac-user with full access to the printer functionality, e.g. automatic down-loading of fonts not resident in the printer. It is also able to generate response messages to Macintosh printer queries, for older printers without bi-directional support.

This functionality maintains backward compatibility with old printers and Macintosh computers.

Verifying the Set Up

You simply need to print a document from the Macintosh to verify communication to the chosen printer. The basic installation can be considered complete if the print test is satisfactory. The AXIS 540+/542+ is now ready to use as a print server.

Note:
❑ For information on advanced EtherTalk functions such as non-PostScript printer support, please refer to the Axis NPS Print Server Technical Reference. You can obtain this from your dealer or via the WWW. Refer also to *Appendix E - How To Contact Axis.*

ASCII, TBCP and BCP

Binary Communication Protocol and Tagged Binary Communication Protocol are communication protocols used by the serial and parallel ports of a printer. They allow 8-bit binary data in files concurrent with the use of some control characters, for communication and print job control. TBCP is required for printing with a binary data stream on some printers. e.g HP printers.
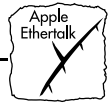
You may select either ASCII or either of these binary data protocols for your printing within the Macintosh environment, by following the step by step instructions below:

1. Open the Chooser.

2. Select a network printer driver, any LaserWriter will do.

3. Select the printer port that has a name ending in "_CFG".

4. Close the Chooser.

5. Open a text editor, e.g. SimpleText.

6. Write a text file containing the following:

    > BINARY : YES

    > BINARY_TYPE : TBCP

    The first parameter, BINARY, can take the values YES or NO. The second parameter, BINARY_TYPE, can take the values BCP or TBCP. See the technical reference for more information on these parameters.

7. Print the above text file. The settings will be stored permanently in the print server.

8. Open the Chooser and select the printer port you wish to use for printing documents.

9. Close the Chooser.

10. Complete.

Other Macintosh Configuration Methods

Should you wish to change the AXIS 540+/542+ default name or amend any of its default parameters from a Macintosh host, there are a number of configuration methods that you may wish to consider.

Web Browser

If your network supports TCP/IP, you may alternatively configure the AXIS 540+/542+ using an appropriate Web browser. Any AppleTalk parameter in the AXIS 540+/542+ Configuration file may be amended from within the AppleTalk Configuration Page. Refer to *Section 8 - Web Based Management* for further information.
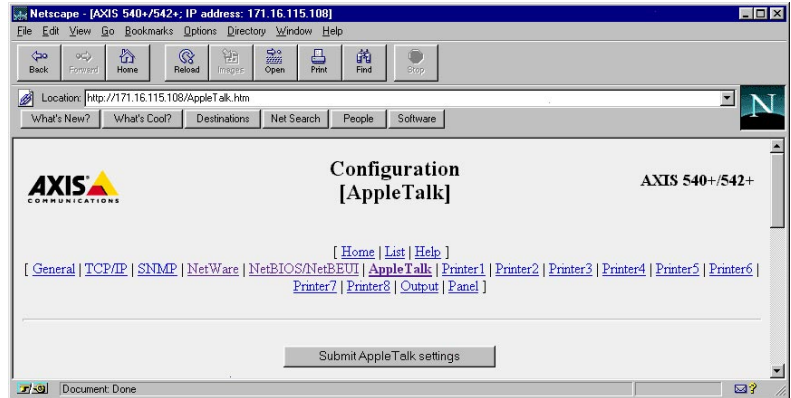
The AXIS 540+/542+ AppleTalk Configuration Page

AXIS NetPilot

If you have a Windows platform connected to your network you may wish to install and manage the AXIS 540+/542+ using the AXIS NetPilot. Refer to *Basic Set Up with AXIS NetPilot* on page 22.
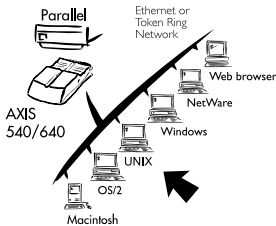
Using FTP

FTP provides another method for configuring the AXIS 540/640. To access the *config* file from a Macintosh you will need FTP support such as MacTCP, Fetch or Anarchie. For further information refer to *Editing using FTP,* on page 98.

Section 7 Setting Up - UNIX

Installation in the UNIX Environment

Having performed the basic TCP/IP setup procedures as defined in *Section 2 - Basic Installation*, you are now able to print in interactive mode using FTP or Reverse Telnet protocols.

However, should you require to integrate the AXIS 540/640 into your host spooler you will now need to use the Axis automatic installation script *axinstall*. This utility software is resident on the AXIS 540/640 and can be can be up-loaded to your host using FTP, so no disks or tapes are required. Having completed this operation the printer connected to the AXIS 540/640 will appear as though it is directly connected to the host printer spooler.

If you intend to operate your AXIS 540/640 in a multiprotocol environment, you should also proceed to the other relevant sections in this manual, namely:

Section 3   Setting Up - NetWare
Section 4   Setting Up - Windows
Section 5   Setting Up - OS/2
Section 6   Setting Up - Macintosh
Section 8   Web Based Management

Note: ❏ The script *axinstall* is <u>not</u> available in the AXIS 540 and AXIS 542 models. However, this script may be uploaded from any other of the AXIS print servers and used for configuring these models. This script can also be downloaded from the AXIS Utilities diskette or alternatively, obtained via the Axis WWW Home Page, see *Appendix C - Updating the Software*.
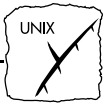
**Integration into the
Host Printer Spooler**

To integrate the AXIS 540/640 into the host printer spooler you will need to use the auto installation script *axinstall,* resident in the AXIS 540/640. You may install this software onto your host using FTP. To do this, login to the AXIS 540/640 with this command:
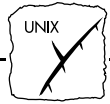
```
ftp <host name>
```

where host name is the name assigned in your system host table, (e.g. salesdept).

You will be prompted for user id and password. Use the user id *root,* which has the default password *pass* (*root* is the user id with the highest priority). Up-load the script using the command get axinstall as shown in the example below.

Log out using the command quit, bye or exit depending on your FTP version.

```
> ftp salesdept
connected to salesdept.
220 AXIS 540/640 FTP Printer Server
ready.
Name (salesdept:thomas): root
331 User name ok, need password
Password: pass          (not visible)
230 User logged in
ftp> get axinstall
220 PORT command successful.
150 Opening data connection for axinstall
(192,36,253,4,13,223) (0 bytes), (mode ascii).
226 Transfer complete.
local: axinstall remote: axinstall
27545 bytes received in 4.1 seconds (6.5 kbytes/s)
ftp> bye
221 Goodbye.
>
```

Typical FTP session for collecting the axinstall script

The *axinstall* script has now been up-loaded to your host. Execute the script with this command:

```
sh axinstall
```

You will be guided through the installation by a step-by-step procedure. During the installation you will be asked to select a print method; we suggest you choose LPD or, for more functionality, use the PROS filter or named pipe methods. Please refer to the following pages if you need guidance on the choice of print methods.

axinstall will suggest one of the systems listed below when started. If you do not find the suggestion appropriate, then manually select any of the systems listed.

```
1....SunOS 4 (SUN BSD, Solaris 1.x)
2....SunOS 5 (SUN SYS V, Solaris 2.x)
3....AIX (IBM RS/6000, BULL DPX 20)
4....HP-UX (HP 9000)
5....BOS (BULL DPX 2)
6....DEC OSF/1 (Digital Equipment, Alpha)
7....ULTRIX (Digital Equipment, DEC)
8....IRIX (Silicon Graphics, SGI)
9....SCO UNIX (Santa Cruz Operation)
10...FreeBSD (Berkeley UNIX)
11...Generic BSD (Berkeley UNIX)
12...Generic SYS V R3 (UNIX System V Release 3)
13...Generic SYS V R4 (UNIX System V Release 4)
```

Systems supported by axinstall
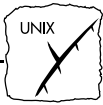
Print Methods on TCP/IP Networks

The AXIS 540/640 supports several different print methods in the TCP/IP environment. *axinstall* will suggest a print method suitable for your particular UNIX system, but you might want to use another method depending on your printing requirements (banner pages, status logging, etc.)

The diagram below shows the alternative data paths taken by some of the UNIX print methods. This illustrates some of the advantages and limitations of the different methods. Use the following information to determine which method to adopt.
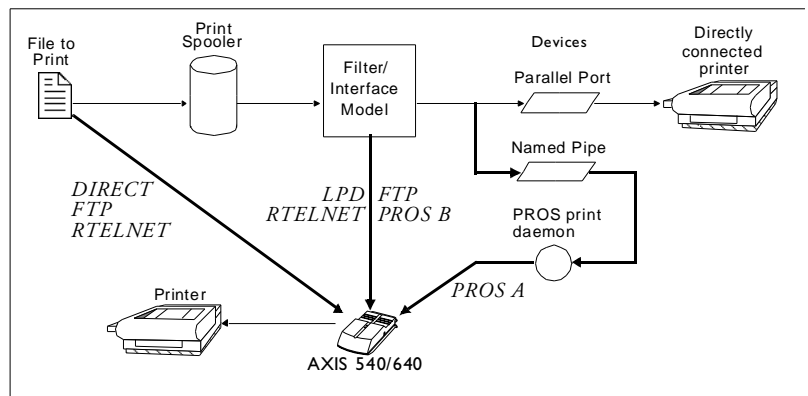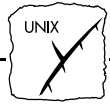

Illustration of different UNIX print methods

LPD The Line Printer Daemon is a protocol for transferring print jobs between hosts. This is the recommended method for UNIX systems, but some System V versions do not support LPD.

Advantages:
Easy to set up – install the AXIS 540/640 as a remote queue in System V, or add a remote printer to `/etc/printcap` using the `rm` and `rp` fields (BSD).

Limitations:
Spooler features, and `printcap` or `lpr` options (BSD) such as multiple copies, are not available.

FTP   The File Transfer Protocol is used for transferring files between hosts.

Advantages:
Uses industry standard network software on the host.

Limitations:
No printer status logging. In the case of BSD it may conflict with other input or output filters and does not allow both input and output filters. In System V no filters or interface programs can be used.

PROS   A protocol developed at Axis.
Comes in two versions; *named pipe* (PROS A) and *filter* (PROS B).

PROS A   **PROS A - Advantages:**
The AXIS 540/640 appears as a device to the system. This makes all filter and model options available. It provides accounting and status logging. Supports bi-directional printing. The printer information read back can be viewed in a log file.

PROS A - Limitations:
A 'C' compiler is required to build the PROS A drivers.

PROS B   **PROS B - Advantages:**
It provides accounting and status logging. Supports bi-directional printing. The printer information read back can be viewed in a log file.

PROS B - Limitations:
A 'C' compiler is required to build the PROS B drivers and in the case of BSD, it may conflict with other input or output filters. It does not allow both input and output filters. Interface programs can not be used in System V.

Reverse Telnet

Often used for printing via a terminal server printer port. Only recommended if you already have a Reverse Telnet driver installed.

Advantages:
Easy to set up with previously installed Reverse Telnet drivers.

Limitations:
No status logging. Drivers are not supplied with the AXIS 540/640. Existing drivers may be slow.

Other UNIX Systems

Most UNIX systems resemble either BSD or System V and so with some ingenuity, a solution can be devised for other variants.

If the system has BSD socket type networking support, then `prosbsd` (in the `bsd` directory of the AXIS 540/640) can be used as a starting point. It receives print data from `stdin`, and writes a log file to `stderr`. Nothing is written to `stdout`.

Alternatively, FTP may be used. It is a good idea to use `bsd/ftp_bsd` or `sysv/ftp_sysv` as a starting point.

OS/2 Systems

If you are using OS/2 version 2.x and you wish to print through TCP/IP, we recommend that you use the IBM TCP/IP for OS/2 product. It supports the LPD and interactive FTP print methods.
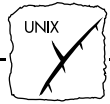
IBM MVS Systems

A sample JCL script, `jclex`, is available in the `mvs` directory of the AXIS 540/640. It gives an example of how to print a file from an MVS mainframe to an AXIS 540/640 using FTP.

IBM AS/400 Systems

Axis has produced a white paper covering AS/400 printing to Axis network print servers. It is available on Internet via the Axis WWW Home Page at **http://www.axis.com/**.

Windows NT Systems

If you are using Windows NT version 3.5 or later, you can use LPD printing over the TCP/IP protocol. For instructions on installing the TCP/IP protocol stack on your Windows NT platform, refer to *Windows NT - LPD Printing* on page 54.

Using Logical Printers to Customise your Printing

The AXIS 540/640 has a powerful facility for altering the print data. This means that your desired print format can be realised on any type of printer. The following actions may be invoked from the AXIS 540/640:

- The character set can be changed to suit the printer

- Strings can be added before and after the print data

- Strings within the print data can be substituted

- ASCII to PostScript conversion

- Hex Dump mode to assist with printing problems

If any of these actions are required a *Logical Printer* is used to change the print data before being sent to the printer port. There are eight logical printers that can be set up to filter the print data.

Edit the parameters in the AXIS 540/640 *config* file to configure a logical printer. Refer to *Appendix A - The Test Button*. The default logical printers settings are such that PR1 - PR4 cause no change to the flow of print data, while PR5 - PR8 add CR to LF control characters:

Logical Printer	Changes to data
PR1	no change
PR2	no change
PR3	no change
PR4	no change
PR5	add CR to LF
PR6	add CR to LF
PR7	add CR to LF
PR8	add CR to LF

Logical Printer: A logical printer acts as a filter between the network and the physical printer. It appears to the user as a normal printer with additional characteristics. For example, a UNIX workstation may only send a line feed (LF) to a shared printer that requires both a carriage return (CR) and LF. The logical printer can solve this problem by adding a CR.
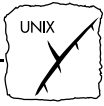
Character Set Conversion

A common problem in a multiple host environment is that different hosts use different ASCII character sets. As a result of this, language specific characters (such as å ü ô ñ) are sometimes printed incorrectly.

The AXIS 540/640 solution to this problem is to assign a character set conversion filter to a logical printer, and then link that logical printer to the host causing the problem.

There are several different filters to choose from within the PR1_CSET Character Set Conversion. Refer to *Appendix A - The Test Button*. The output from the conversion filter is always IBM PC Set 2 (Code Page 437), and this is the character set the printer must be set up for.

> **Example:**
> **The Problem:** Your network contains three hosts using the character sets IBM PC Set 2, ISO 8859-2, and DEC.
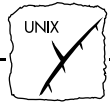>
> **The Solution:** In order to direct their print jobs to the same printer you should assign each host to a separate logical printer, and install character set conversion filters. Edit the following entries in your config file:

```
PR1_CSET. :  NONE
PR2_CSET. :  ISO>IBM
PR3_CSET. :  DEC>IBM
```

> **The Result:**
> Logical printer PR1 prints data transparently without conversion.
> Logical printer PR2 converts ISO 8859-2 data to IBM PC Set 2.
> Logical printer PR3 converts DEC data to IBM PC Set 2.
>
> This arrangement will produce correct printouts for all language specific characters.

Adding Strings Before and After Print Jobs

These string functions provide a way to send printer control commands before and after each print job. They may be specified individually for each logical printer.

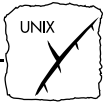All strings are entered as hexadecimal byte values.

Example 1:
Assume that the logical printer PR5 is configured as a PostScript printer. To append the PostScript End of File character (Ctrl-D, hex 04) after each print job, edit the following entry in your config file:

```
PR5_AFT.   :  04
```

Example 2:
You have an HP LaserJet printer with dual input bins, and want to print on pre-printed forms when using the logical printer PR4. The standard forms are taken form bin 1, and the pre-printed forms are taken from bin 2. The strings before and after print jobs should then contain commands to select bin 2 ($^{E}_{C}$&14H) and bin 1 ($^{E}_{C}$&11H) respectively. Edit the following entries in your config file:

```
PR4_BEF.   :  1B 26 6C 34 48
PR4_AFT.   :  1B 26 6C 31 48
```

String Substitutions

The string substitution function performs search and replace operations on the print data. The primary application is to replace printer control commands. Up to 20 string substitutions may be specified individually for each logical printer.

All strings must be entered as hexadecimal byte values, and each match and substitute string must be preceded by a count byte. See Appendix A, PR1_STR String Substitutions.

Example 1:
To replace the UNIX New Line (hex 0A) with an ASCII NewLine (hex 0D 0A) for logical printer PR1, edit the following entry in your *config file*:

```
PR1_STR.   :  01 0A 02 0D 0A
```

01 is the match string count byte (length of the match string),
0A is the match string,
02 is the substitute count byte, and
0D 0A is the substitute string.

This is the default setting for logical printers PR5 through PR8.

Example 2:
To replace the UNIX New Line (hex 0A) with an ASCII NewLine (hex 0D 0A), and the printer command ^E_CG1 (hex 1B 47 31) with ^E_CY (hex 1B 59) for logical printer PR2, edit the following entry in your *config file*:

```
PR2_STR.   :  01 0A 02 0D 0A 03 1B 47 31 02 1B 59
```

Note: ❑ Extensive use of string substitutions will naturally decrease the throughput rate of the AXIS 540/640.

ASCII to Postscript Conversion

The AXIS 540/640 logical printers can translate ASCII print data into PostScript format. This makes it possible to print with a PostScript printer from a host that does not support PostScript. The conversion is selected by activating a filter that converts ASCII data into Postscript. This filter may be activated individually for each logical printer.
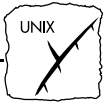
Example:

The following entries in your *config* file will allow print data applied to PR1 to pass without changes, print data applied to PR2 will be converted from ASCII to PostScript, and PR3 data will be searched - any ASCII data will be converted to PostScript, while PostScript data will be allowed to pass without change.

```
PR1_FILT. :  NONE
PR2_FILT. :  POSTSCR
PR3_FILT. :  AUTO_PS
```

The AUTO_PS configuration is used when you are not sure if the print data is ASCII or PostScript.

When a logical printer is set for PostScript conversion it needs to know the page size, page orientation, page formats and which font is to be used. The default page size is A4 and the default page orientation is Portrait, while the page format parameters are:

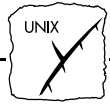| Page Format Parameter	Default Value	
Lines per page	66	
Characters per line	0	0=disable line wrap
Characters per inch	10.0	
Lines per inch	60	60 = 60 lines per inch
Left margin	30	30 = 3.0 mm
Top margin	50	50 = 5.0 mm

The PostScript font can be any font that is installed in the printer; if no font is specified, Courier will be used.

Example:

The following entries are needed in your config file to set up logical printer number 2 for ASCII to PostScript conversion with the stated printing characteristics.

```
PR2_FILT.:POSTSCR              (PostScript conversion on)
PR2_SIZE.:LETTER               (page size = letter)
PR2_ORNT.:LANDS                (orientation = landscape)
PR2_FORM.:48 0 120 60 30 50    (48 LPP, 0 CPL, 12 CPI, 6 LPI,
                                3 mm left margin, and
                                5 mm  top margins)
PR2_FONT.:Helvetica            (font = Helvetica)
```

Read-back of information

The AXIS 540/640 supports bi-directional printing. The information from the printer is read back on the parallel port when the parameter PRx_IN has the default setting of AUTO. However, it is required that the printer also supports bi-directional printing. Through the parameter PRx_IN the communication can be disabled.

Example:
The following entry is needed in your config file to disable the bi-directional communication:

PR1_IN.   :   NONE   (Read-back of information)

**Debugging using the Hex Dump Mode**

When hex dump mode is activated, the print data is printed as hexadecimal byte values rather than characters; printer control commands are also printed as hex values. This allows you to inspect what control and print characters are being sent to the printer, which is a useful debugging facility for the more difficult printing problems.

Example:
The following is an example of the entries needed in your config file to activate the hex dump mode for PR3:

PR3_DUMP.:YES   (switch on hex dump mode for PR 3)

Note: ❏ The page length for hex dump printouts is determined by the lines per page value of the PostScript page format parameter.
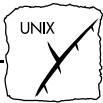
Using Telnet with the AXIS 540/640

The *Telnet support* makes it possible to log in to the AXIS 540/640 and execute various commands as shown in the example below. Use the following command to log in: `telnet <host name>`

```
> telnet salesdept
Trying 192.36.253.96...
Connected to salesdept.
Escape character is '^]'.

AXIS 540/640 TELNET Printer Server

AXIS 540/640 network login: root
Password: pass      (not visible)

AXIS 540/640 TELNET Printer Server

Root> help
Commands may be abbreviated:
logout        logout from TELNET
version       print current software version
help          print this list
status        show current printing status
account       show current account file
softreset     protocol restart of AXIS 540/640
hardreset     reboot of AXIS 540/640
defaults      set default parameters in AXIS 540/640
Root> logout
Goodbye!
Connection closed by foreign host.
>
```
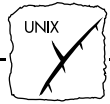
Typical Telnet session to display available commands

_____

Telnet support: Telnet is a TCP/IP command that allows you to manage a remote system, in this case the AXIS 540/640. The AXIS 540/640 has a number of built in commands that can be executed via Telnet. Recent firmware updates may have changed the commands that are available, so use the help command (as shown above) to list the Telnet facilities in your print server.

Viewing AXIS 540/640 Accounting File using Telnet

The accounting file contains data concerning the ten last print jobs. It specifies an internal job number, the user that initiated the job, the protocol and logical printer that was used, current status (Completed, Offline, or Printing), number of bytes printed, elapsed time and off line time. The file can be accessed using FTP or Telnet.

```
> telnet salesdept
Trying 192.36.253.96...
Connected to salesdept.
Escape character is '^]'.

AXIS 540/640 TELNET Printer Server

AXIS 540/640 network login: root
Password: pass    (not visible)

AXIS 540/640 TELNET Printer Server

Root> account
Current account file:
JOB USER           PROT     LPR   S  BYTES    ETIME OTIME

 1  Thomas         FTP      pr2   C  1885     2     0
 2  Joe            LPT      pr1   C  23074    4     0
 3  RICHARD        PSERVER  pr2   C  43044    5     0
 4  MacUser        APPLE    pr1   C  6717     2     0
 5  LSLM_user      NetBIOS  pr2   C  36995    3     0
 6  patrick        PROS     pr5   P  83208    9     0
Root>
```

Typical Telnet session to view the Accounting File

Note: ❑ Since the print server supports HTTP, the accounting of the AXIS 540/640 may also be viewed using a Web browser. Click Account on the AXIS 540/640 Home Page to examine the status of any recent print jobs.

Viewing the AXIS 540/640s Status using Telnet

The status command shows which printer port the logical printers are assigned to, and their current status.

```
> telnet salesdept
Trying 192.36.253.96...
Connected to salesdept.
Escape character is '^]'.


AXIS 540/640 TELNET Printer Server

AXIS 540/640 network login: root
Password: pass   (not visible)


AXIS 540/640 TELNET Printer Server

Root> status
Current printer status:
Printer Port Status    Bytes printed Comments
pr1     LPT1 Printing 20916         Ready
pr2     LPT1 Occupied               Ready
pr3     LPT1 Occupied               Ready
pr4     LPT1 Occupied               Ready
pr5     LPT1 Occupied               Ready
pr6     LPT1 Occupied               Ready
pr7     LPT1 Occupied               Ready
pr8     LPT1 Occupied               Ready

Root>
```
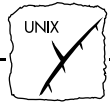
Typical Telnet session to view logical printer status

Note: ❑ Since the print server supports HTTP, the accounting of the AXIS 540/640 may also be viewed using a Web browser. Click Status on the AXIS 540/640 Home Page to view logical printer status.

Using SNMP for Remote Monitoring

You may use SNMP (Simple Network Management Protocol) for remote monitoring of the AXIS 540/640. All major functions applicable to print servers are supported.
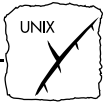
General Information

SNMP actually refers to a set of standards for network management, including a protocol, a database structure specification, and a set of data objects. The AXIS 540/640 SNMP implementation runs in the TCP/IP environment.

The actual management is handled by an NMS (Network Management System) software running on a host on your network. The NMS software communicates with network devices by the means of messages, which are references to one or more objects.

A message can be a question or an instruction to a device, or an alarm triggered by a specific event in a device. Objects are contained in data bases called MIBs (Management Information Base), where MIB-II is a standard database.

The AXIS 540/640 supports all relevant parts of MIB-II. It also includes a private enterprise MIB. The AXIS MIB is described later in this section.

System Requirements for SNMP

The following requirements must be fulfilled in order to make full use of the AXIS 540/640 SNMP support:

• An NMS software that allows you to install private enterprise MIBs.

• A host that supports FTP on which to run the NMS software.

Follow these steps to add the AXIS MIB to your NMS software:

1. Log in to the AXIS 540/640 using FTP.

2. Up-load the MIB file */snmp/axis.mib* to the NMS host.

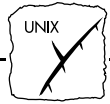3. Install the AXIS MIB according to instructions in your NMS software documentation.

Note: ❑ The AXIS MIB is <u>not</u> available in the AXIS 540 and AXIS 542 models. However, this can be uploaded from any other of the AXIS print servers and used for configuring these models. This file may also be downloaded from the AXIS Utilities diskette or alternatively, obtained via the Axis WWW Home Page, see *Appendix C - Updating the Software.*

The AXIS MIB

The AXIS MIB contains a large number of objects which may be categorised as follows:

• Menu objects - used for viewing and changing the AXIS 540/640 configuration from the NMS program. Refer to *Appendix A - The Test Button.*

• Printer status and unit administration objects - used for monitoring AXIS 540/640 print jobs and storing parameter changes permanently.

• Trap objects - used for alarms at various error conditions.

For technical details, you can view the MIB file (*axis.mib*) with any text editor.

Other UNIX Configuration Methods

Web Browser

You may alternatively configure the AXIS 540+/542+/640 and 642 models for operation within the TCP/IP environment, using an appropriate Web browser. Any TCP/IP parameter in the AXIS 540/640 Configuration file may be amended from within the TCP/IP Configuration Page. Refer to *Section 8 - Web Based Management* for further information.
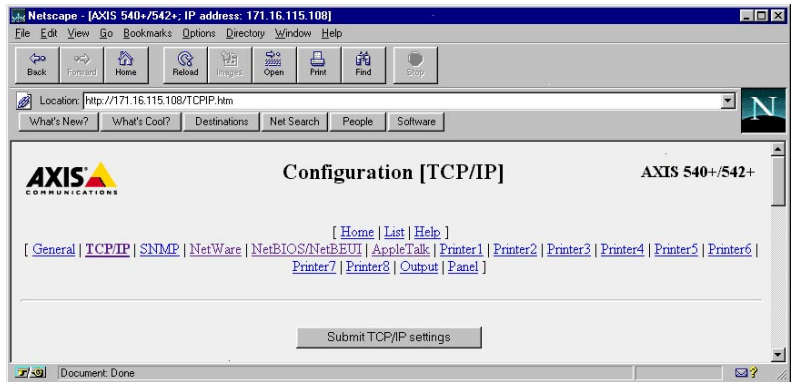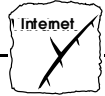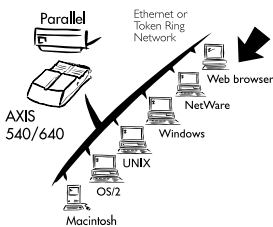

The AXIS 540+/542+ TCP/IP Configuration Page

FTP

FTP provides another method for configuring the AXIS 540/640. For further information refer to *Editing using FTP* on page 98.

Section 8 Web Based Management

Having established TCP/IP communication as described in *Section 2 - Basic Installation*, you are now able to access AXIS 540/640 series of Network Print Servers from any standard Web browser.

Furthermore, the enhanced HTTP support available in the AXIS 540+/542+ and Token Ring models includes a quick and easy management tool for performing all print server configuration tasks, within all supported networking environments. Whether printing from within a NetWare, UNIX, Windows, OS/2, Macintosh or a mixed networking environment, you will find the ease with which you can amend configuration parameters using HTTP, a considerable benefit.

The information provided within this section will provide an informative and valuable supplement to previous sections of this manual that are relevant to your network. It describes how you may access the Home Page of the AXIS 540/640 and also explains how the unit may be configured for use within your local networking environment.

After successfully navigating your way around the AXIS 540/640 Web Pages you may proceed to one or more of the following sections, as appropriate to your type of network.

Section 3   Setting Up - NetWare
Section 4   Setting Up - Windows
Section 5   Setting Up - OS/2
Section 6   Setting Up - Macintosh
Section 7   Setting Up - UNIX

Accessing the Web Pages

Preparation

To access the AXIS 540/640 Home Page the Internet Address must be set, as described in *Basic Set Up for TCP/IP,* on page 25.

Accessing the
Configuration Pages

Follow the steps below to access the Home Page of the AXIS 540/640. The browser used in the following example is Netscape Navigator 2.0.

1. Start the Netscape Navigator.

2. From the File menu, select Open Location...

3. Enter the Internet Address of the AXIS 540/640 as a URL in your browser, as detailed below:

> **Open Location**
>
> Open Location:
>
> http://171.16.2.232/
>
> Cancel   Open

4. If you have assigned a host name, you may refer directly to the host name instead:

> **Open Location**
>
> Open Location:
>
> http://npserver
>
> Cancel   Open
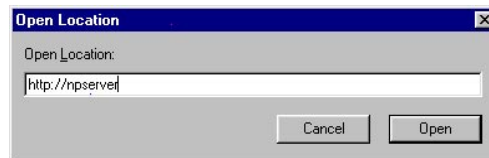
5. The Home Page of your AXIS 540/640 will now be displayed in your browser.

Note: ❏ The Home Page for the AXIS 540/542 models will differ from that of the AXIS 540+/542+ and Token Ring models. This is due to the enhanced HTTP support features that are provided in the latter.
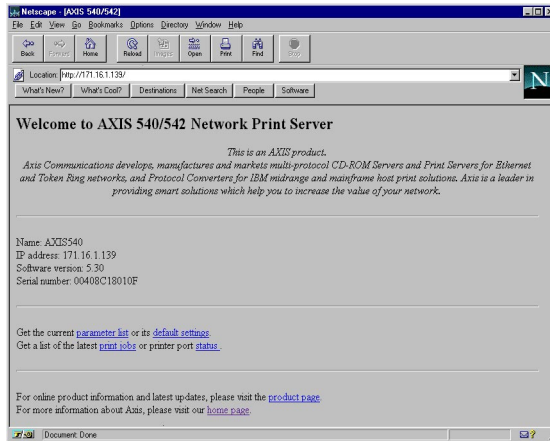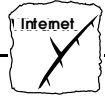
The AXIS 540/542 Home Page

From within the AXIS 540/542 Home Web Page you may view the latest print jobs, printer port status and examine the current parameter list, or default settings. Links to the AXIS Home and Product Pages are also provided.
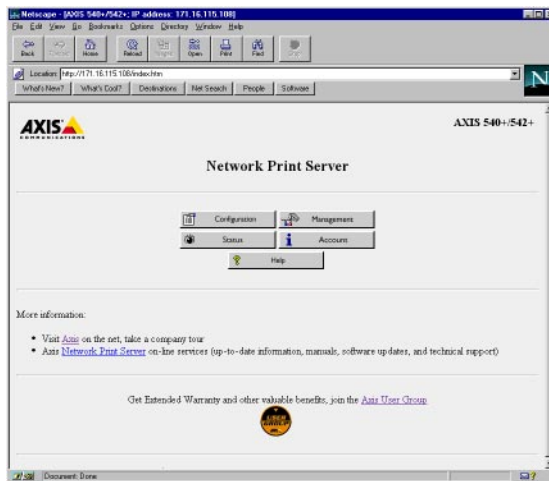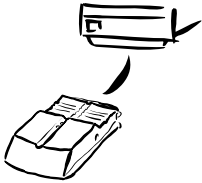

The AXIS 540+/542+ Home Page

The enhanced HTTP support features included in the AXIS 540+/542+ and Token Ring models are further described below.

Enhanced HTTP Management Services

Links to the following services are available from the Home Page of the AXIS 540+, 542+, 640 and 642 models:

- Configuration

- Management

- Status

- Account

- Help

You can also visit Axis on the net, take a company tour and access any of the Axis Network Print Server on-line services; including, manuals, software updates, and technical support. You may also join the Axis UserGroup for extended warranty and other valuable benefits.

Services Summary
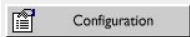
A summary of the enhanced services available from the AXIS 540+/542+/640/642 Home Page follows:

From within the Configuration pages you may:

- modify configuration parameters of the AXIS 540+/542+/640/642.
  A complete list of these parameters is contained in *Appendix B - The Parameter List.*

- enable and disable any of the available networking protocols and modify their operation from appropriate configuration pages.

- change the node address

- amend the root password

Note: ❑ When clicking on either Management or Configuration for the first time, you will be asked to provide a username and password. By default these are set to root and pass, respectively.

Caution ☛ Any network configuration should involve the Network Administrator.
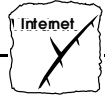
The Management Page allows you to reset the print server and set the parameters to the factory default values. You may also view basic information about your the AXIS 540+/542+/640/642, i.e. the current software version, ethernet address, serial number, base URL address, enabled networking protocols.

User-friendly links to other services are also provided, including Change root password.

You may view the status of the connected printer ports from the Status Page, examine the number of bytes printed, etc.

Maintains and displays a historical record of print jobs that also defines the user, logical printer, protocol, file size, elapsed time and offline time.

The AXIS NetPilot Help utility is primarily designed to assist users with the use of the AXIS NetPilot. However, the information contained in this help utility is equally relevant to network configuration and management activities that can be performed via the internal Web Pages of the AXIS 540+/542+/640/642. An HTTP version of the AXIS NetPilot Help facility is therefore made available to assist you to with any of the operations detailed above.

Appendix A The Test Button

The Test Button is located on the front right hand side of the AXIS 540/640. By depressing this button you are able to:

• Print a test page, to check the connection to the printer.

• Print a parameter list, to define the current settings within your AXIS 540/640.

• Reset the AXIS 540/640 parameters to the original factory default settings.

The functionality of the Test Button is determined by the power status of the AXIS 540/640 and the number of times the button is depressed.

A description of these functions complete with instructions for their implementation, are detailed in the following sections of this appendix.

The Test Page

After connecting your printer to the port of your AXIS 540/640, it is recommended that you print out a test page to verify that the cable interface is functioning correctly. The simplest way to do this, is to simply depress the Test Button once. The printed Test Page contains basic information about the AXIS 540/640.

The Parameter List

By simply double clicking on the Test button, the current parameter settings installed in your AXIS 540/640 print server can be output to the connected printer.

This list provides comprehensive details of all of the parameters and their current status. The parameters may be changed according to your requirements using the AXIS NetPilot software.

Note: ❑   Some of the parameters require that the AXIS 540/640 is restarted before becoming effective.

Factory Default
Settings

Should you wish to reset the AXIS 540/640 to the factory default settings, the best way to do this is to use the Test button. This procedure involves switching the AXIS 540/640 off and on.

1. Remove the power cord to switch off the AXIS 540/640.

2. Press and hold down the Test button. Whilst continuing to press the Test button, simultaneously switch on the AXIS 540/640 by replacing the power cord. Keep the Test button pressed for at least 20 seconds after restoring power until the Network indicator flashes at one second intervals.

3. Release the Test button and wait at least five seconds (five indicator flashes).

4. Press and hold the Test button again for at least five seconds until the Network indicator remains constantly lit.

The AXIS 540/640 is now reset to factory default settings. Restart the AXIS 540/640 by switching it off and on.

Note: The Node address parameter NODE_ADDR will remain unchanged, but all other parameters are reset. Should you wish to change the Node address, you may do so via the General Property page, using AXIS NetPilot.
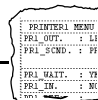
Appendix B   The Parameter List

This appendix provides an overview of the AXIS 540/640 parameters and describes how they may be edited. A sample parameter list is also included. However, please note that because of recent print server software updates, some differences may exist between the parameters installed on your print server and those that are described within this document.

Please refer to the AXIS Network Print Server Technical Reference for a complete description of the parameters. Alternatively, you may wish to access the Axis WWW Home Page at **http://www.axis.com/**, where you can down-load the latest technical information. For details of the appropriate WWW address in your region, please refer to *Appendix E - How To Contact Axis*.

Editing the Configuration Parameters

Editing using AXIS NetPilot

All parameter settings are stored in the AXIS 540/640 *config* file, which may be edited via the Property Pages of the AXIS NetPilot software. Each Property Page comprises an array of selection tabs that are appropriate to your operating environments. Each parameter may be defined by using the relevant box. For further information on the Property Pages, please refer to *Section 3 - Setting Up - NetWare.*

Editing using a Web browser

If your network supports TCP/IP you may view and edit the AXIS 540/640 parameter list using any standard Web browser.

Editing using FTP	The File Transfer Protocol provides another alternative for changing the parameter settings.

UNIX, Windows and OS/2 Workstations	Follow the step-by-step procedure below to edit the *config* file from UNIX, Windows and OS/2 workstations, using FTP:

1. Log in to the AXIS 540/640 by typing the command:
   `ftp <host name>↵`

2. Enter `root` as user id and `pass` as password.

3. Up-load the *config* file by typing: `get config↵`

4. Edit the file using your preferred text editor.

5. Down-load the *config* file by typing:
   `put config CONFIG↵`

Notes: ❑ It is important that the edited filename is specified in block capitals. Otherwise, the edits are regarded as temporary and will be lost once the AXIS 560/660 has been powered down.

❑ The method for performing file transfers using FTP can vary, dependent upon which FTP application you are using.

Editing from a Macintosh	To edit the *config* file from a Macintosh you will need FTP support such as MacTCP, Fetch or Anarchie. The procedure for doing this is the same as described for UNIX above.

Printing parameters on the printer	The current parameter list may output to a printer connected to the AXIS 540/640 by double-clicking the Test button.
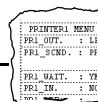
The Config File

The remainder of this appendix contains the complete AXIS 540/640 parameter list. The left-hand column shows the parameters and their default values as they appear in the config file, and the right column contains brief descriptions of the parameters.

Most parameters will take effect in the print server for the next incoming print job after being changed. However, those parameters marked *(Requires Restart)*, will require the print server to be restarted before the new parameter setting can take effect. Restart is also required when the Ring Speed Switch is changed on the AXIS 640.

Please note that the password relates to parameters, e.g. ROOT_PWD and PROS_PWD will only be shown when logged in as *root,* i.e. not when printing the parameters using the Test button.

```
---   CONFIG MENU
```

NODE_ADDR.	: 00 40 8C 10 00 86	Node Address
BASE URL.	: WWW.AXIS.COM	Default Base URL Address *(AXIS 540+/640+ only)*
ROOT_PWD.	: pass	Root Password
USERS.	:	User Authority and Printer Access
S_ROUTE.	: auto	Token Ring Source Routing Mode *(Only AXIS 640/642)*

```
---   TCP/IP MENU
```

TCP_ENB.	: YES	TCP/IP Protocol Enabled
INT_ADDR.	: 192 36 253 80	Internet Address
DEF_ROUT.	: 0 0 0 0	Default Router Address *(0.0.0.0 for no router)*
NET_MASK.	: 0 0 0 0	Net Mask *(e.g. 255.255.255.0 for class C, 0.0.0.0 for auto-sense)*
PROS_PRT.	: 35	PROS TCP Port Number
PROS_PWD.	: netprinter	PROS Protocol Password
LPD_BANN.	: NO	LPD Banner Page Disabled
DHCP_ENB.	: NO	DHCP Protocol Enabled
BOOTP_ENB.	: YES	BOOTP Protocol Enabled
RARP_ENB.	: YES	RARP Protocol Enabled
RTN_OPT.	: YES	Reverse Telnet Options Enabled
RTEL_PR1.	: 0	PR1 Reverse Telnet TCP Port Number *(0 for Disabled)*
RTEL_PR2.	: 0	PR2 Reverse Telnet TCP Port Number *(0 for Disabled)*
RTEL_PR3.	: 0	PR3 Reverse Telnet TCP Port Number *(0 for Disabled)*
RTEL_PR4.	: 0	PR4 Reverse Telnet TCP Port Number *(0 for Disabled)*
RTEL_PR5.	: 0	PR5 Reverse Telnet TCP Port Number *(0 for Disabled)*
RTEL_PR6.	: 0	PR6 Reverse Telnet TCP Port Number *(0 for Disabled)*
RTEL_PR7.	: 0	PR7 Reverse Telnet TCP Port Number *(0 for Disabled)*
RTEL_PR8.	: 0	PR8 Reverse Telnet TCP Port Number *(0 for Disabled)*

```
---   SNMP MENU
```

READ_COM.	: public	Read-Only Community Name
WRT_COM.	: pass	Read-Write Community Name
TRAPADDR.	: 0 0 0 0	SNMP Trap Internet Address
TRAP_COM.	: public	SNMP Trap Community Name
SYS_CONT.	:	System Contact
SYS_NAME.	:	System Name
SYS_LOC.	:	System Location
SNMP_AUT.	: DISABLE (DISABLE, ENABLE)	Authentication Failure Traps
TRAP_PRT.	: DISABLE (DISABLE, ENABLE)	Printer Traps

```
---   NETWARE MENU
```

NETW_ENB.	: YES	NetWare Protocol Enabled
PS_NAME.	: AXIS100086	Print Server Name *(100086 are the last six digits of the serial number)*
JOB_CHECK_DELAY.	: 5	Print Server queue polling interval
CONF_CHECK_DELAY.	: 300	Interval between automatic configuration checks
FR_802_3.	: YES	IEEE 802.3 Frame Type Enabled
FR_ETH_2.	: YES	Ethernet II Frame Type Enabled
FR_802_2.	: YES	IEEE 802.2 Frame Type Enabled
FR_SNAP.	: YES	SNAP Frame Type Enabled
NCP_BURST_MODE.	: YES	NetWare Burst Mode Enabled *(Requires Restart)*
PSERVER_NDS.	:	File server & Name of print server (including context)
PSERVER_BINDERY1.	:	Bindery file server name
PSERVER_BINDERY2.	:	Bindery file server name
PSERVER_BINDERY3.	:	Bindery file server name
PSERVER_BINDERY4.	:	Bindery file server name
PSERVER_BINDERY5.	:	Bindery file server name
PSERVER_BINDERY6.	:	Bindery file server name
PSERVER_BINDERY7.	:	Bindery file server name
PSERVER_BINDERY8.	:	Bindery file server name
PSERVER_BINDERY9.	:	Bindery file server name
PSERVER_BINDERY10.	:	Bindery file server name
PSERVER_BINDERY11.	:	Bindery file server name
PSERVER_BINDERY12.	:	Bindery file server name
PSERVER_BINDERY13.	:	Bindery file server name
PSERVER_BINDERY14.	:	Bindery file server name
PSERVER_BINDERY15.	:	Bindery file server name
PSERVER_BINDERY16.	:	Bindery file server name
NPRINTER1.	:	Print Server name. Slot
NPRINTER2.	:	Print Server name. Slot
NPRINTER3.	:	Print Server name. Slot
NPRINTER4.	:	Print Server name. Slot
NPRINTER5.	:	Print Server name. Slot
NPRINTER6.	:	Print Server name. Slot
NPRINTER7.	:	Print Server name. Slot
NPRINTER8.	:	Print Server name. Slot
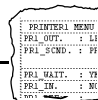
```
--- NetBIOS/NetBEUI MENU
```

LSLM_ENB.	: YES	LAN Server/LAN Manager Protocol Enabled
NB_FR_TYPE.	: FR_AUTO (FR_AUTO, FR_802_2, FR_DIX)	Frame Type *(Requires Restart)*
LPRINT_1.	: AX100086.LP1	Printer 1 Name *(100086 are the last six characters of the serial number)*
LLOGIC_1.	: PR1 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Printer 1 Logical Printer
LPRINT_2.	:	Printer 2 Name
LLOGIC_2.	: PR2 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Printer 2 Logical Printer
LPRINT_3.	:	Printer 3 Name
LLOGIC_3.	: PR3 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Printer 3 Logical Printer
LPRINT_4.	:	Printer 4 Name
LLOGIC_4.	: PR4 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Printer 4 Logical Printer
LPRINT_5.	:	Printer 5 Name *(Not available in AXIS 540 and AXIS 542)*
LLOGIC_5.	: PR5 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Printer 5 Logical Printer *(Not available in AXIS 540 and AXIS 542)*
LPRINT_6.	:	Printer 6 Name *(Not available in AXIS 540 and AXIS 542)*
LLOGIC_6.	: PR6 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Printer 6 Logical Printer *(Not available in AXIS 540 and AXIS 542)*
LPRINT_7.	:	Printer 7 Name *(Not available in AXIS 540 and AXIS 542)*
LLOGIC_7.	: PR7 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Printer 7 Logical Printer *(Not available in AXIS 540 and AXIS 542)*
LPRINT_8.	:	Printer 8 Name *(Not available in AXIS 540 and AXIS 542)*
LLOGIC_8.	: PR8 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Printer 8 Logical Printer *(Not available in AXIS 540 and AXIS 542)*

```
--- APPLETALK MENU
```
(AXIS 540+ and AXIS 542+ only)

|		
ATLK_ENB.	: YES	AppleTalk Protocol Enabled
ATK_ZONE.	:	AppleTalk Zone
ZONER_EN.	: YES	HP Zoner Enabled
ATK_FONT.	: DEFAULT (DEFAULT, 35N, ALL)	PostScript Font Set
BINARY.	: YES	Binary Transfer Enabled
BINARY_TYPE.	: TBCP (TBCP, BCP)	Type of Binary Communication Protocol used if Binary Transfer (see above) is enabled
APRINT_1.	: AXIS100086_LPT1	Printer 1 Name *(100086 are the last six digits of the serial number)*
ATYPE_1.	: LaserWriter	Printer 1 Type
ALOGIC_1.	: PR1 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Printer 1 Logical Printer
APRINT_2.	: AXIS100086_2	Printer 2 Name
ATYPE_2.	:	Printer 2 Type
ALOGIC_2.	: PR2 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Printer 2 Logical Printer

```
---   PRINTER1 MENU
```

PR1_WAIT.	: YES		*(No function. Reserved for future use.)*
PR1_IN.	: AUTO	(NONE, AUTO)	PR1 Read-Back of information
PR1_BEF.	:		PR1 String Before Print Job
PR1_STR.	:		PR1 String Substitutions
PR1_CSET.	: NONE	(NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)	PR1 Character Set Conversion
PR1_FILT.	: NONE	(NONE, POSTSCR, AUTO_PS)	PR1 Printer Language Translation
PR1_AFT.	:		PR1 String After Print Job
PR1_DUMP.	: NO		PR1 Hex Dump Mode
PR1_SIZE.	: A4	(A4, LETTER, LEGAL, EXECUT)	PR1 PostScript Page Size
PR1_ORNT.	: PORTR	(PORTR, LANDS, R_PORTR, R_LANDS)	PR1 PostScript Page Orientation
PR1_FORM.	: 66 0 100 60 30 50		PR1 PostScript Page Format *(MPL, MPP, CPI, LPI, LM, TM)*
PR1_FONT.	:		PR1 PostScript Font *(Courier when not specified)*

```
---   PRINTER2 MENU
```

PR2_WAIT.	: YES		*(No function. Reserved for future use.)*
PR2_IN.	: AUTO	(NONE, AUTO)	PR2 Read-Back of information
PR2_BEF.	:		PR2 String Before Print Job
PR2_STR.	:		PR2 String Substitutions
PR2_CSET.	: NONE	(NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)	PR2 Character Set Conversion
PR2_FILT.	: NONE	(NONE, POSTSCR, AUTO_PS)	PR2 Printer Language Translation
PR2_AFT.	:		PR2 String After Print Job
PR2_DUMP.	: NO		PR2 Hex Dump Mode
PR2_SIZE.	: A4	(A4, LETTER, LEGAL, EXECUT)	PR2 PostScript Page Size
PR2_ORNT.	: PORTR	(PORTR, LANDS, R_PORTR, R_LANDS)	PR2 PostScript Page Orientation
PR2_FORM.	: 66 0 100 60 30 50		PR2 PostScript Page Format *(MPL, MPP, CPI, LPI, LM, TM)*
PR2_FONT.	:		PR2 PostScript Font *(Courier when not specified)*

```
---   PRINTER3 MENU
```

PR3_WAIT.	: YES		*(No function. Reserved for future use.)*
PR3_IN.	: AUTO	(NONE, AUTO)	PR3 Read-Back of information
PR3_BEF.	:		PR3 String Before Print Job
PR3_STR.	:		PR3 String Substitutions
PR3_CSET.	: NONE	(NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)	PR3 Character Set Conversion
PR3_FILT.	: NONE	(NONE, POSTSCR, AUTO_PS)	PR3 Printer Language Translation
PR3_AFT.	:		PR3 String After Print Job
PR3_DUMP.	: NO		PR3 Hex Dump Mode
PR3_SIZE.	: A4	(A4, LETTER, LEGAL, EXECUT)	PR3 PostScript Page Size
PR3_ORNT.	: PORTR	(PORTR, LANDS, R_PORTR, R_LANDS)	PR3 PostScript Page Orientation
PR3_FORM.	: 66 0 100 60 30 50		PR3 PostScript Page Format *(MPL, MPP, CPI, LPI, LM, TM)*
PR3_FONT.	:		PR3 PostScript Font *(Courier when not specified)*
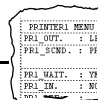
```
---   PRINTER4 MENU
```

PR4_WAIT.	: YES		(No function. Reserved for future use.)
PR4_IN.	: AUTO	(NONE, AUTO)	PR4 Read-Back of information
PR4_BEF.	:		PR4 String Before Print Job
PR4_STR.	:		PR4 String Substitutions
PR4_CSET.	: NONE	(NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)	PR4 Character Set Conversion
PR4_FILT.	: NONE	(NONE, POSTSCR, AUTO_PS)	PR4 Printer Language Translation
PR4_AFT.	:		PR4 String After Print Job
PR4_DUMP.	: NO		PR4 Hex Dump Mode
PR4_SIZE.	: A4	(A4, LETTER, LEGAL, EXECUT)	PR4 PostScript Page Size
PR4_ORNT.	: PORTR	(PORTR, LANDS, R_PORTR, R_LANDS)	PR4 PostScript Page Orientation
PR4_FORM.	: 66 0 100 60 30 50		PR4 PostScript Page Format (MPL, MPP, CPI, LPI, LM, TM)
PR4_FONT.	:		PR4 PostScript Font (Courier when not specified)

```
---   PRINTER5 MENU
```

| PR5_WAIT.	: YES		(No function. Reserved for future use.)
PR5_IN.	: AUTO	(NONE, AUTO)	PR5 Read-Back of information
PR5_BEF.	:		PR5 String Before Print Job
PR5_STR.	: 010A0 20D0A		PR5 String Substitutions
PR5_CSET.	: NONE	(NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)	PR5 Character Set Conversion
PR5_FILT.	: NONE	(NONE, POSTSCR, AUTO_PS)	PR5 Printer Language Translation
PR5_AFT.	:		PR5 String After Print Job
PR5_DUMP.	: NO		PR5 Hex Dump Mode
PR5_SIZE.	: A4	(A4, LETTER, LEGAL, EXECUT)	PR5 PostScript Page Size
PR5_ORNT.	: PORTR	(PORTR, LANDS, R_PORTR, R_LANDS)	PR5 PostScript Page Orientation
PR5_FORM.	: 66 0 100 60 30 50		PR5 PostScript Page Format (MPL, MPP, CPI, LPI, LM, TM)
PR5_FONT.	:		PR5 PostScript Font (Courier when not specified)

```
---   PRINTER6 MENU
```

PR6_WAIT.	: YES		(No function. Reserved for future use.)
PR6_IN.	: AUTO	(NONE, AUTO)	PR6 Read-Back of information
PR6_BEF.	:		PR6 String Before Print Job
PR6_STR.	: 010A0 20D0A		PR6 String Substitutions
PR6_CSET.	: NONE	(NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)	PR6 Character Set Conversion
PR6_FILT.	: NONE	(NONE, POSTSCR, AUTO_PS)	PR6 Printer Language Translation
PR6_AFT.	:		PR6 String After Print Job
PR6_DUMP.	: NO		PR6 Hex Dump Mode
PR6_SIZE.	: A4	(A4, LETTER, LEGAL, EXECUT)	PR6 PostScript Page Size
PR6_ORNT.	: PORTR	(PORTR, LANDS, R_PORTR, R_LANDS)	PR6 PostScript Page Orientation
PR6_FORM.	: 66 0 100 60 30 50		PR6 PostScript Page Format (MPL, MPP, CPI, LPI, LM, TM)
PR6_FONT.	:		PR6 PostScript Font (Courier when not specified)

--- PRINTER7 MENU

PR7_WAIT.	: YES	*(No function. Reserved for future use.)*
PR7_IN.	: AUTO (NONE, AUTO)	PR7 Read-Back of information
PR7_BEF.	:	PR7 String Before Print Job
PR7_STR.	: 010A0 20D0A	PR7 String Substitutions
PR7_CSET.	: NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)	PR7 Character Set Conversion
PR7_FILT.	: NONE (NONE, POSTSCR, AUTO_PS)	PR7 Printer Language Translation
PR7_AFT.	:	PR7 String After Print Job
PR7_DUMP.	: NO	PR7 Hex Dump Mode
PR7_SIZE.	: A4 (A4, LETTER, LEGAL, EXECUT)	PR7 PostScript Page Size
PR7_ORNT.	: PORTR (PORTR, LANDS, R_PORTR, R_LANDS)	PR7 PostScript Page Orientation
PR7_FORM.	: 66 0 100 60 30 50	PR7 PostScript Page Format *(MPL, MPP, CPI, LPI, LM, TM)*
PR7_FONT.	:	PR7 PostScript Font *(Courier when not specified)*

--- PRINTER8 MENU

PR8_WAIT.	: YES	*(No function. Reserved for future use.)*
PR8_IN.	: AUTO (NONE, AUTO)	PR8 Read-Back of information
PR8_BEF.	:	PR8 String Before Print Job
PR8_STR.	: 010A0 20D0A	PR8 String Substitutions
PR8_CSET.	: NONE (NONE, ISO>IBM, 7UK>IBM, 7SW>IBM, 7GE>IBM, 7FR>IBM, 7ND>IBM, DEC>IBM)	PR8 Character Set Conversion
PR8_FILT.	: POSTSCR (NONE, POSTSCR, AUTO_PS)	PR8 Printer Language Translation
PR8_AFT.	:	PR8 String After Print Job
PR8_DUMP.	: NO	PR8 Hex Dump Mode
PR8_SIZE.	: A4 (A4, LETTER, LEGAL, EXECUT)	PR8 PostScript Page Size
PR8_ORNT.	: PORTR (PORTR, LANDS, R_PORTR, R_LANDS)	PR8 PostScript Page Orientation
PR8_FORM.	: 66 0 100 60 30 50	PR8 PostScript Page Format *(MPL, MPP, CPI, LPI, LM, TM)*
PR8_FONT.	:	PR8 PostScript Font *(Courier when not specified)*

--- OUTPUT MENU

L1_CENTR.	: HISPEED (IBM_PC, STNDRD, FAST, HISPEED)	LPT1 Centronics Interface Timing
L1_BSYTM.	: 60	LPT1 Busy Status Time-Out. All status reporting disabled if set to 0.

--- PANEL MENU

DEF_OUT.	: PR1 (PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8, LPT1)	Internal Printout Destination
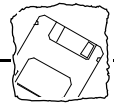
Appendix C Updating the Software

The following software can be updated:

- AXIS NetPilot configuration software

- AXIS Print Utility for Windows

- AXIS Print Utility for OS/2

- The AXIS 540/640 print server software held in _Flash Memory_

- The _axinstall_ script

- The AXIS MIB file

All software updates are free of charge.

Obtaining the Updated Software

Over the Internet

You may wish to check the Axis WWW Home Page at **http://www.axis.com/**, where you can down-load the latest versions of the software utilities.

Anonymous FTP

Files and information are also available through anonymous ftp: log in to **ftp.axis.com** and go to the /pub/axis directory.

Flash Memory

The AXIS 540/640 server software is stored in Flash Memory. This memory is provided by a silicon chip that like any other ROM device, retains data content even after power is removed. However, Flash Memory is unique because it allows its data to be erased and re-written. This means that you can install software updates for your AXIS 540/640 as soon as they become available, without having to replace any parts. The new software is simply loaded into the AXIS 540/640 over the network.
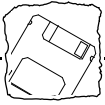
Web Browser Support

Because the AXIS 540/640 supports the HTTP protocol over TCP/IP, you may download the latest software releases directly from the Software Upgrade Page.

To display the Software Upgrade Page simply click the 'Software upgrade' link within the Management Page. By following the instruction provided you may then automatically initiate a file transfer between the Axis Public Archive Server and your workstation. Once the transfer is complete, you should then download this image file to the AXIS 540/640 using FTP, as described in *Upgrading over the Network using FTP,* on page 107.

Your dealer

Contact your dealer to check if there have been any new releases of the software. You should have your present version number ready to compare against the latest software release.

Upgrading the Software
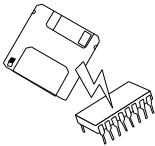
There are three methods with which to update to the AXIS 540/640 Flash memory:

• through the parallel port LPT1, **or**

• using the AXIS NetPilot, **or**

• over the network using FTP on a TCP/IP network

The preferred methods are described below.

Note: ❏   Updating instructions are also supplied with the software update.

Updating Using the NetPilot

This is the most convenient method for updating AXIS Network Print Server Software. An Installation Wizard is available to guide you through the necessary procedures, simply click on the Upgrade icon of the AXIS NetPilot Toolbar to display the Upgrade Wizard menu.
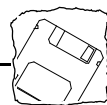
Upgrading over the Network using FTP

To upgrade over the network using FTP you will need the following:

- The file with the new print server software. The name of this file is in the form *product.version*, e.g. 540_524.exe for software release 5.24. You may use any of the aforementioned methods to obtain the new file.

- The AXIS 540/640 must also be installed on the network with TCP/IP as described in *Basic Set Up for TCP/IP,* on page 25.

Follow the procedures below to upgrade the AXIS 540/640:

1. Log in to the AXIS 540/640 with the command ftp <host name> where <host name> is the name assigned in your system host table.

2. You will be prompted for user id and password. Use the user id root, which has the default password pass (root the user id with the highest priority).

3. Issue the command binary to change to binary transfer mode.

4. Issue the command put <software name> flash where <software name> is the name of the new print server software, e.g. 540.524.

5. Wait for the Flash load to finish. This normally takes 1 to 4 minutes. The unit will then automatically restart with the new print server software.

Caution ❏ Be careful not to interrupt the file transfer. If the transfer is interrupted the AXIS 540/640 may have to be re-initialized by your dealer.

6. Log out using the command quit, bye or exit depending on your FTP version.

Notes: ❏ Should you encounter any problem that prevents a successful upgrade over your network, it may become necessary to perform the flash loading operation via the parallel port, LPT1. In this instance, you are advised to contact your dealer, or Axis via the WWW. Please refer to *Appendix E - How To Contact Axis*.
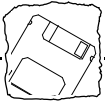
Appendix D Technical Specifications

Supported Systems

Novell NetWare:	Versions 3.11, 3.12, 4.10 and above, supporting both NDS and Bindery Emulation. Up to 16 file servers and 96 print queues can be served. User messages are also supported. Print Methods: RPRINTER/NPRINTER, PSERVER.
Microsoft LAN Manager:	LAN Manager 2.0c and above, running under OS/2 ver 1.3 and above.
IBM LAN Server:	LAN Server 1.3 and above, running under OS/2 ver 1.3 and above including OS/2 Warp, OS/2 Warp Connect.
Microsoft Windows:	Windows NT ver. 3.5 and above, Windows for Workgroups, Windows 95.
UNIX:	All Operating Systems supporting the TCP/IP suite of protocols, including:
BSD Systems:	BSD 4.2, 4.3, 4.4, SunOS4 (Solaris 1.x), DEC Ultrix etc.
System V Systems:	R3, R4, AT&T, Interactive, SCO, SunOS5 (Solaris 2.x), HP-UX, IBM AIX, Silicon Graphics IRIX, DEC Alpha OSF/1, BULL (BOS, AIX).
Other Systems:	IBM (MVS, VM, VSE, OS/400), DEC VMS, guidelines for other systems.
Print Methods:	LPD, FTP, PROS (named pipe & filtered), Reverse Telnet.
Apple EtherTalk:	**(AXIS 540+/542+ only)** Print Method: AppleTalk Phase 2.
WWW:	Netscape Navigator 3.0 and MS internet explorer 3.0 or compatible browsers.

Supported Protocols

NetWare:	IPX, SAP, RIP, SPX, SNMP and NCP (extended with NDS).
Windows and OS/2:	NetBIOS/NetBEUI or TCP/IP.
TCP/IP:	LPD, FTP, Telnet, Reverse Telnet, PROS, BOOTP, ARP, RARP, DHCP* ICMP, IP, TCP, UDP, HTTP, SNMP.
Apple EtherTalk:	(AXIS 540+/542+ only) AARP, ATP, DDP, NBP, PAP, RTMP, ZIP.
Network Management	SNMP-MIB II compliant, private enterprise MIB included.LAN Network Manager for OS/2, Print server status in NWAdmin/PCONSOLE*.

Hardware

AXIS 540+/542+/640/642	32 bit RISC Controller, 1 Mbyte Flash memory. 256 kbytes RAM.
AXIS 540/542	32 bit RISC Controller, 512 kbyte Flash memory. 128 kbytes RAM.

*   "+" and Token Ring models only.

Logical Connection

AXIS 540/542
: Running simultaneously any combination of the supported protocols. Use of IEEE802.2, IEEE802.3, SNAP and Ethernet II frame types simultaneously.

AXIS 640/642
: Running simultaneously any combination of the supported protocols. Use of IEEE802.2 and IEEE802.5 (with Early Token release support for 16 Mbps), frame types simultaneously.

Attachments

AXIS 540/540+
: 10baseT (Twisted Pair) Ethernet.

AXIS 542/542+
: 10base2 (Thin) Ethernet.

AXIS 640
: Media type 3/RJ45/UTP. Support for 4 and 16 Mbps Token Ring networks.

AXIS 642
: Media type 1/DB9/STP. Support for 4 and 16 Mbps Token Ring networks.

Security

UNIX:
: Root password. User access list and printer access.

NetWare:
: Encrypted passwords.

Logical Printers

The logical printer ports can be programmed to perform auto ASCII to PostScript conversion, string before and after job, string substitution, alternative output and character set conversion.

Parallel Printer

One IEEE 1284 compliant high-speed parallel port, 36-pin Centronics connector. Sustained throughput up to 400 kbytes/s using NetWare or LAN Server/LAN Manager. Bi-directional support for Apple, Reverse Telnet, PROS.

Front Panel

2 LED indicators: Power and Network.
Test button for information printouts.
Slide switch for Token Ring speed (**AXIS 640/642 only**).

Power Consumption

Power provided by external supply

AXIS 540/540+
: Maximum 170 mA at 12 VDC. (Type PS-A, 9 V, 300 mA). Power can optionally be provided by the printer (Centronics pin 18: 5 VDC, 300 mA).

AXIS 542/542+
: Maximum 170 mA at 15 VDC. (Type PS-B, 12 V, 500 mA).

AXIS 640/642:
: Maximum 170 mA at 15 VDC. (Type PS-B, 12 V, 500 mA). An optional jumper enables power provided by the printer (Centronics pin 18: 5 VDC, 350 mA).

Dimensions

Height x Width x Depth

AXIS 540/540+
: 1.1 x 2.2 x 4.7 inches (2.7 x 5.6 x 11.8 cm)

AXIS 542/542+	1.1 x 2.9 x 4.7 inches (2.7 x 7.2 x 11.8 cm)
AXIS 640/642	1.1 x 2.2 x 4.7 inches (2.7 x 5.6 x 11.8 cm)
Weight	0.26 lb. (0.12 Kg)
Environmental	Temperature: 40 - 105° F (5 - 40° C). Humidity: 10 - 95% non-condensing.

Approvals

EMC:	EN 55022/1987, EN50082-1/1992. FCC Class A.
Safety:	EN 60950.

CE

All specifications are subject to change without prior notice

Size: 7.7
Weight: 1.6
Power: 12

Approvals

Appendix E How To Contact Axis

Technical Support

Should you require any technical assistance, please contact your Axis dealer. If your questions can not be answered immediately, your Axis dealer will forward your queries through the appropriate channels to ensure that you get an expedient response.

Internet and World Wide Web

If you are connected to Internet, please take the time to look at the Axis WWW Home Page at **http://www.axisinc.com/** or **http://www.axis.com/**. Here you can find information about the company and our products. You can also down-load on-line manuals, tools such as the Acrobat Reader for different platforms, and the latest versions of the software utilities. Your Axis dealer will be pleased to provide you with any additional assistance or information that you might require.

You may also access these pages directly Axis WWW Home Page from the internal Web pages of the AXIS 540/640.
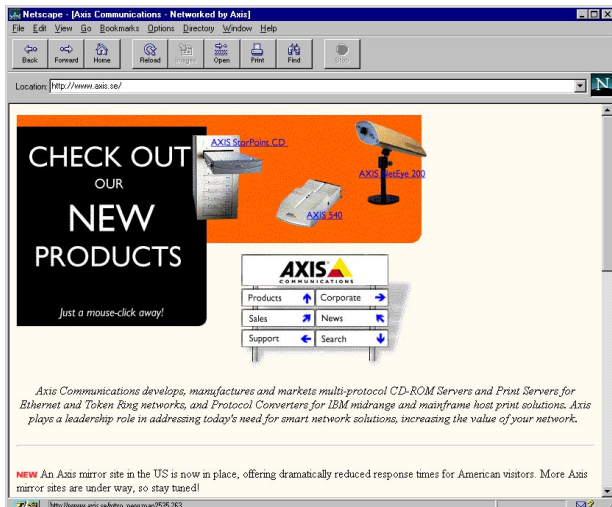
The Axis WWW Home Page.

FTP

You may also obtain files and information through anonymous ftp: log in to **ftp.axisinc.com** or **ftp.axis.com** and go to the /pub/axis directory. Alternatively, enter **ftp://ftp.axisinc.com/pub/axis** or **ftp://ftp.axis.com/pub/axis** in your WWW browser.

The Axis Bulletin Board System

Another way to access the Axis archive is the Axis BBS. You will need a high-speed modem, a VT100 or VT220 terminal emulator and a Kermit or ZModem compatible software. Dial **+46 46 12 06 32** or **+46 46 211 94 53** and log in as **guest** (no password required).

The Axis Offices

To contact an Axis office, choose the one nearest to your region:

Europe, Middle East, Latin America, Africa, Australia

Axis Communications AB
Scheelevägen 16
S-223 70 Lund, Sweden
Phone: +46 46 270 18 00
Fax: +46 46 13 61 30
Email: info@axis.com
URL: http://www.axis.com/

North America

Axis Communications Inc.
4 Constitution Way, Suite G
Woburn, MA 01801-1030, USA
Phone: 1-800-444-AXIS, (617) 938-1188
Fax: (617) 938-6161
Email: info@axisinc.com
URL: http://www.axisinc.com/

France

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Fax: +33 1 49 69 15 59

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